

“Understanding Media, The Extensions of Man”.

Marshall McLuhan:

Part I, Chapters 1-7

Introduction

James Reston wrote in The New York Times (July 7, 1957):

A health director . . . reported this week that a small mouse, which presumably had been watching television, attacked a little girl and her full-grown cat . . . Both mouse and cat survived, and the incident is recorded here as a reminder that things seem to be changing.

After three thousand years of explosion, by means of fragmentary and mechanical technologies, the Western world is imploding. During the mechanical ages we had extended our bodies in space. Today, after more than a century of electric technology, we have extended our central nervous system itself in a global embrace, abolishing both space and time as far as our planet is concerned. Rapidly, we approach the final phase of the extensions of man - the technological simulation of consciousness, when the creative process of knowing will be collectively and corporately extended to the whole of human society, much as we have already extended our senses and our nerves by the various media. Whether the extension of consciousness, so long sought by advertisers for specific products, will be "a good thing" is a question that admits of a wide solution. There is little possibility of answering such questions about the extensions of man without considering all of them together. Any extension, whether of skin, hand, or foot, affects the whole psychic and social complex.

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Some of the principal extensions, together with some of their psychic and social consequences, are studied in this book. Just how little consideration has been given to such matters in the past can be gathered from the consternation of one of the editors of this book. He noted in dismay that "seventy-five per cent of your material is new. A successful book cannot venture to be more than ten per cent new." Such a risk seems quite worth taking at the present time when the stakes are very high, and the need to understand the effects of the extensions of man becomes more urgent by the hour.

In the mechanical age now receding, many actions could be taken without too much concern. Slow movement insured that the reactions were delayed for considerable periods of time. Today the action and the reaction occur almost at the same time. We actually live mythically and integrally, as it were, but we continue to think in the old, fragmented space and time patterns of the pre-electric age.

Western man acquired from the technology of literacy the power to act without reacting. The advantages of fragmenting himself in this way are seen in the case of the surgeon who would be quite helpless if he were to become humanly involved in his operation. We acquired the art of carrying out the most dangerous social operations with complete detachment. But our detachment was a posture of noninvolvement. In the electric age, when our central nervous system is technologically extended to involve us in the whole of mankind and to incorporate the whole of mankind in us, we necessarily participate, in

depth, in the consequences of our every action. It is no longer possible to adopt the aloof and dissociated role of the literate Westerner.

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The Theater of the Absurd dramatizes this recent dilemma of Western man, the man of action who appears not to be involved in the action. Such is the origin and appeal of Samuel Beckett's clowns. After three thousand years of specialist explosion and of increasing specialism and alienation in the technological extensions of our bodies, our world has become compressional by dramatic reversal. As electrically contracted, the globe is no more than a village. Electric speed in bringing all social and political functions together in a sudden implosion has heightened human awareness of responsibility to an intense degree. It is this implosive factor that alters the position of the Negro, the teenager, and some other groups. They can no longer be contained, in the political sense of limited association. They are now involved in our lives, as we in theirs, thanks to the electric media.

This is the Age of Anxiety for the reason of the electric implosion that compels commitment and participation, quite regardless of any "point of view." The partial and specialized character of the viewpoint, however noble, will not serve at all in the electric age. At the information level the same upset has occurred with the substitution of the inclusive image for the mere viewpoint. If the nineteenth century was the age of the editorial chair, ours is the century of the psychiatrist's couch. As extension of man the chair is a specialist ablation of the posterior, a sort of ablative absolute of backside, whereas the couch extends the integral being. The psychiatrist employs the couch, since it removes the temptation to express private points of view and obviates the need to rationalize events.

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The aspiration of our time for wholeness, empathy and depth of awareness is a natural adjunct of electric technology. The age of mechanical industry that preceded us found vehement assertion of private outlook the natural mode of expression. Every culture and every age has its favorite model of perception and knowledge that it is inclined to prescribe for everybody and every thing. The mark of our time is its revulsion against imposed patterns. We are suddenly eager to have things and people declare their beings totally. There is a deep faith to be found in this new attitude - a faith that concerns the ultimate harmony of all being. Such is the faith in which this book has been written. It explores the contours of our own extended beings in our technologies, seeking the principle of intelligibility in each of them. In the full confidence that it is possible to win an understanding of these forms that will bring them into orderly service, I have looked at them anew, accepting very little of the conventional wisdom concerning them. One can say of media as Robert Theobald has said of economic depressions: "There is one additional factor that has helped to control depressions, and that is a better understanding of their development." Examination of the origin and development of the individual extensions of man should be preceded by a look at some general aspects of the media, or extensions of man, beginning with the never-explained numbness that each extension brings about in the individual and society.

1. The Medium Is the Message

In a culture like ours, long accustomed to splitting and dividing all things as a means of control, it is sometimes a bit of a shock to be reminded that, in operational and practical fact, the medium is the message. This is merely to say that the personal and social consequences of any medium - that is, of any extension of ourselves - result from the new scale that is introduced into our affairs by each extension of ourselves, or by any new technology. Thus, with automation, for example, the new patterns of human association tend to eliminate jobs, it is true. That is the negative result. Positively, automation creates roles for people, which is to say depth of involvement in their work and human association that our preceding mechanical technology had destroyed. Many people would be disposed to say that it was not the machine, but what one did with the machine, that was its meaning or message. In terms of the ways in which the machine altered our relations to one another and to ourselves, it mattered not in the least whether it turned out cornflakes or Cadillacs. The restructuring of human work and association was shaped by the technique of fragmentation that is the essence of machine technology. The essence of automation technology is the opposite. It is integral and decentralist in depth, just as the machine was fragmentary, centralist, and superficial in its patterning of human relationships.

The instance of the electric light may prove illuminating in this connection. The electric light is pure information. It is a medium without a message, as it were, unless it is used to spell out some verbal ad or name. This fact, characteristic of all media, means that the "content" of any medium is always another medium. The content of writing is speech, just as the written word is the content of print, and print is the content of the telegraph. If it is asked, "What is the content of speech?" it is necessary to say, "It is an actual process of thought, which is in itself nonverbal." An abstract painting represents direct manifestation of creative thought processes as they might appear in computer designs. What we are considering here, however, are the psychic and social consequences of the designs or patterns as they amplify or accelerate existing processes. For the "message" of any medium or technology is the change of scale or pace or pattern that it introduces into human affairs. The railway did not introduce movement or transportation or wheel or road into human society, but it accelerated and enlarged the scale of previous human functions, creating totally new kinds of cities and new kinds of work and leisure. This happened whether the railway functioned in a tropical or a northern environment, and is quite independent of the freight or content of the railway medium. The airplane, on the other hand, by accelerating the rate of transportation, tends to dissolve the railway form of city, politics, and association, quite independently of what the airplane is used for.

Let us return to the electric light. Whether the light is being used for brain surgery or night baseball is a matter of indifference.

It could be argued that these activities are in some way the "content" of the electric light, since they could not exist without the electric light. This fact merely underlines the point that "the medium is the message" because it is the medium that shapes and controls the scale and form of human association and action. The content or uses of such media are as diverse as they are ineffectual in shaping the form of human association. Indeed, it is only too typical that the "content" of any medium blinds us to the character of the medium. It is only today that industries have become aware of the various kinds of business in which they are engaged. When IBM discovered that it was not in the business of making office equipment or business machines, but that it was in the business of processing information, then it began to navigate with clear vision. The General Electric Company makes a considerable portion of its profits from electric light bulbs and lighting systems. It has not yet discovered that, quite as much as AT&T, it is in the business of moving information.

The electric light escapes attention as a communication medium just because it has no "content." And this makes it an invaluable instance of how people fail to study media at all. For it is not till the electric light is used to spell out some brand name that it is noticed as a medium. Then it is not the light but the "content" (or what is really another medium) that is noticed. The message of the electric light is like the message of electric power in industry, totally radical, pervasive, and decentralized. For electric light and power are separate from their uses, yet they eliminate time and space factors in human association exactly as do radio, telegraph, telephone, and TV, creating involvement in depth.

A fairly complete handbook for studying the extensions of man could be made up from selections from Shakespeare. Some might quibble about whether or not he was referring to TV in these familiar lines from *Romeo and Juliet*:

But soft! what light through yonder window breaks?
It speaks, and yet says nothing.

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In *Othello*, which, as much as *King Lear*, is concerned with the torment of people transformed by illusions, there are these lines that bespeak Shakespeare's intuition of the transforming powers of new media:

Is there not charms
By which the property of youth and maidhood
May be abus'd? Have you not read Roderigo,
Of some such thing?

In Shakespeare's *Troilus and Cressida*, which is almost completely devoted to both a psychic and social study of communication, Shakespeare states his awareness that true social and political navigation depend upon anticipating the consequences of innovation:

The providence that's in a watchful state
Knows almost every grain of Plutus' gold,
Finds bottom in the uncomprehensive deeps,

Keeps place with thought, and almost like the gods
Does thoughts unveil in their dumb cradles.

The increasing awareness of the action of media, quite independently of their "content" or programming, was indicated in the annoyed and anonymous stanza:

In modern thought, (if not in fact)
Nothing is that doesn't act,
So that is reckoned wisdom which
Describes the scratch but not the itch.

The same kind of total, configurational awareness that reveals why the medium is socially the message has occurred in the most recent and radical medical theories. In his *Stress of Life*, Hans Selye tells of the dismay of a research colleague on hearing of Selye's theory:

When he saw me thus launched on yet another enraptured description of what I had observed in animals treated with this or that impure, toxic material, he looked at me with desperately sad eyes and said in obvious despair: "But Selye, try to realize what you are doing before it is too late! You have now decided to spend your entire life studying the pharmacology of dirt!" (Hans Selye, *The Stress of Life*)

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As Selye deals with the total environmental situation in his "stress" theory of disease, so the latest approach to media study considers not only the "content" but the medium and the cultural matrix within which the particular medium operates. The older unawareness of the psychic and social effects of media can be illustrated from almost any of the conventional pronouncements.

In accepting an honorary degree from the University of Notre Dame a few years ago, General David Sarnoff made this statement: "We are too prone to make technological instruments the scapegoats for the sins of those who wield them. The products of modern science are not in themselves good or bad; it is the way they are used that determines their value." That is the voice of the current somnambulism. Suppose we were to say, "Apple pie is in itself neither good nor bad; it is the way it is used that determines its value." Or, "The smallpox virus is in itself neither good nor bad; it is the way it is used that determines its value." Again, "Firearms are in themselves neither good nor bad; it is the way they are used that determines their value." That is, if the slugs reach the right people firearms are good. If the TV tube fires the right ammunition at the right people it is good. I am not being perverse. There is simply nothing in the Sarnoff statement that will bear scrutiny, for it ignores the nature of the medium, of any and all media, in the true Narcissus style of one hypnotized by the amputation and extension of his own being in a new technical form. General Sarnoff went on to explain his attitude to the technology of print, saying that it was true that print caused much trash to circulate, but it had also disseminated the Bible and the thoughts of seers and philosophers. It has never occurred to General Sarnoff that any technology could do anything but add itself on to what we already are.

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Such economists as Robert Theobald, W. W. Rostow, and John Kenneth Galbraith have been explaining for years how it is that "classical economics" cannot explain change or growth. And the paradox of mechanization is that although it is itself the cause of maximal growth and change, the principle of mechanization excludes the very possibility of growth or the understanding of change. For mechanization is achieved by fragmentation of any process and by putting the fragmented parts in a series. Yet, as David Hume showed in the eighteenth century, there is no principle of causality in a mere sequence. That one thing follows another accounts for nothing. Nothing follows from following, except change. So the greatest of all reversals occurred with electricity, that ended sequence by making things instant. With instant speed the causes of things began to emerge to awareness again, as they had not done with things in sequence and in concatenation accordingly. Instead of asking which came first, the chicken or the egg, it suddenly seemed that a chicken was an egg's idea for getting more eggs.

Just before an airplane breaks the sound barrier, sound waves become visible on the wings of the plane. The sudden visibility of sound just as sound ends is an apt instance of that great pattern of being that reveals new and opposite forms just as the earlier forms reach their peak performance. Mechanization was never so vividly fragmented or sequential as in the birth of the movies, the moment that translated us beyond mechanism into the world of growth and organic interrelation. The movie, by sheer speeding up the mechanical, carried us from the world of sequence and connections into the world of creative configuration and structure. The message of the movie medium is that of transition from lineal connections to configurations. It is the transition that produced the now quite correct observation: "If it works, it's obsolete." When electric speed further takes over from mechanical movie sequences, then the lines of force in structures and in media become loud and clear. We return to the inclusive form of the icon.

To a highly literate and mechanized culture the movie appeared as a world of triumphant illusions and dreams that money could buy. It was at this moment of the movie that cubism occurred, and it has been described by E. H. Gombrich (*Art and Illusion*) as "the most radical attempt to stamp out ambiguity and to enforce one reading of the picture - that of a man-made construction, a colored canvas." For cubism substitutes all facets of an object simultaneously for the "point of view" or facet of perspective illusion. Instead of the specialized illusion of the third dimension on canvas, cubism sets up an interplay of planes and contradiction or dramatic conflict of patterns, lights, textures that "drives home the message" by involvement. This is held by many to be an exercise in painting, not in illusion.

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In other words, cubism, by giving the inside and outside, the top, bottom, back, and front and the rest, in two dimensions, drops the illusion of perspective in favor of instant sensory awareness of the whole. Cubism, by seizing on instant total awareness, suddenly announced that the medium is the message. Is it not evident that the moment that sequence yields to the simultaneous, one is in the world of the structure and of configuration? Is that not what has happened in physics as in painting, poetry, and in communication? Specialized segments of attention have shifted to total field, and we can now say, "The medium is the message" quite naturally. Before the electric speed

and total field, it was not obvious that the medium is the message. The message, it seemed, was the "content," as people used to ask what a painting was about. Yet they never thought to ask what a melody was about, nor what a house or a dress was about. In such matters, people retained some sense of the whole pattern, of form and function as a unity. But in the electric age this integral idea of structure and configuration has become so prevalent that educational theory has taken up the matter. Instead of working with specialized "problems" in arithmetic, the structural approach now follows the line of force in the field of number and has small children meditating about number theory and "sets."

Cardinal Newman said of Napoleon, "He understood the grammar of gunpowder." Napoleon had paid some attention to other media as well, especially the semaphore telegraph that gave him a great advantage over his enemies. He is on record for saying that "Three hostile newspapers are more to be feared than a thousand bayonets."

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Alexis de Tocqueville was the first to master the grammar of print and typography. He was thus able to read off the message of coming change in France and America as if he were reading aloud from a text that had been handed to him. In fact, the nineteenth century in France and in America was just such an open book to de Tocqueville because he had learned the grammar of print. So he, also, knew when that grammar did not apply. He was asked why he did not write a book on England, since he knew and admired England. He replied:

One would have to have an unusual degree of philosophical folly to believe oneself able to judge England in six months. A year always seemed to me too short a time in which to appreciate the United States properly, and it is much easier to acquire clear and precise notions about the American Union than about Great Britain. In America all laws derive in a sense from the same line of thought. The whole of society, so to speak, is founded upon a single fact; every thing springs from a simple principle. One could compare America to a forest pierced by a multitude of straight roads all converging on the same point. One has only to find the center and everything is revealed at a glance. But in England the paths run criss-cross, and it is only by travelling down each one of them that one can build up a picture of the whole.

De Tocqueville, in earlier work on the French Revolution, had explained how it was the printed word that, achieving cultural saturation in the eighteenth century, had homogenized the French nation. Frenchmen were the same kind of people from north to south. The typographic principles of uniformity, continuity, and linearity had overlaid the complexities of ancient feudal and oral society. The Revolution was carried out by the new literati and lawyers.

In England, however, such was the power of the ancient oral traditions of common law, backed by the medieval institution of Parliament, that no uniformity or continuity of the new visual print culture could take complete hold. The result was that the most important event in English history has never taken place; namely, the English Revolution on the lines of the French Revolution. The American Revolution had no medieval legal institutions to discard or to root out, apart from monarchy. And many

have held that the American Presidency has become very much more personal and monarchical than any European monarch ever could be.

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De Tocqueville's contrast between England and America is clearly based on the fact of typography and of print culture creating uniformity and continuity. England, he says, has rejected this principle and clung to the dynamic or oral common-law tradition. Hence the discontinuity and unpredictable quality of English culture. The grammar of print cannot help to construe the message of oral and nonwritten culture and institutions. The English aristocracy was properly classified as barbarian by Matthew Arnold because its power and status had nothing to do with literacy or with the cultural forms of typography. Said the Duke of Gloucester to Edward Gibbon upon the publication of his *Decline and Fall*: "Another damned fat book, eh, Mr. Gibbon? Scribble, scribble, scribble, eh, Mr. Gibbon?" De Tocqueville was a highly literate aristocrat who was quite able to be detached from the values and assumptions of typography. That is why he alone understood the grammar of typography. And it is only on those terms, standing aside from any structure or medium, that its principles and lines of force can be discerned. For any medium has the power of imposing its own assumption on the unwary. Prediction and control consist in avoiding this subliminal state of Narcissus trance. But the greatest aid to this end is simply in knowing that the spell can occur immediately upon contact, as in the first bars of a melody.

A *Passage to India* by E. M. Forster is a dramatic study of the inability of oral and intuitive oriental culture to meet with the rational, visual European patterns of experience. "Rational," of course, has for the West long meant "uniform and continuous and sequential." In other words, we have confused reason with literacy, and rationalism with a single technology. Thus in the electric age man seems to the conventional West to become irrational. In Forster's novel the moment of truth and dislocation from the typographic trance of the West comes in the Marabar Caves. Adela Quested's reasoning powers cannot cope with the total inclusive field of resonance that is India. After the Caves: "Life went on as usual, but had no consequences, that is to say, sounds did not echo nor thought develop. Everything seemed cut off at its root and therefore infected with illusion."

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A *Passage to India* (the phrase is from Whitman, who saw America headed Eastward) is a parable of Western man in the electric age, and is only incidentally related to Europe or the Orient. The ultimate conflict between sight and sound, between written and oral kinds of perception and organization of existence is upon us. Since understanding stops action, as Nietzsche observed, we can moderate the fierceness of this conflict by understanding the media that extend us and raise these wars within and without us.

Detribalization by literacy and its traumatic effects on tribal man is the theme of a book by the psychiatrist J. C. Carothers, *The African Mind in Health and Disease* (World Health Organization, Geneva, 1953). Much of his material appeared in an article in *Psychiatry* magazine, November, 1959: "The Culture, Psychiatry, and the Written Word." Again, it is electric speed that has revealed the lines of force operating from Western technology in the remotest areas of bush, savannah, and desert. One example is

the Bedouin with his battery radio on board the camel. Submerging natives with floods of concepts for which nothing has prepared them is the normal action of all of our technology. But with electric media Western man himself experiences exactly the same inundation as the remote native. We are no more prepared to encounter radio and TV in our literate milieu than the native of Ghana is able to cope with the literacy that takes him out of his collective tribal world and beaches him in individual isolation. We are as numb in our new electric world as the native involved in our literate and mechanical culture.

Electric speed mingles the cultures of prehistory with the dregs of industrial marketeers, the nonliterate with the semiliterate and the postliterate. Mental breakdown of varying degrees is the very common result of uprooting and inundation with new information and endless new patterns of information. Wyndham Lewis made this a theme of his group of novels called *The Human Age*. The first of these, *The Childermass*, is concerned precisely with accelerated media change as a kind of massacre of the innocents. In our own world as we become more aware of the effects of technology on psychic formation and manifestation, we are losing all confidence in our right to assign guilt. Ancient prehistoric societies regard violent crime as pathetic. The killer is regarded as we do a cancer victim. "How terrible it must be to feel like that," they say. J. M. Synge took up this idea very effectively in his *Playboy of the Western World*.

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If the criminal appears as a nonconformist who is unable to meet the demand of technology that we behave in uniform and continuous patterns, literate man is quite inclined to see others who cannot conform as somewhat pathetic. Especially the child, the cripple, the woman, and the colored person appear in a world of visual and typographic technology as victims of injustice. On the other hand, in a culture that assigns roles instead of jobs to people - the dwarf, the skew, the child create their own spaces. They are not expected to fit into some uniform and repeatable niche that is not their size anyway. Consider the phrase "It's a man's world." As a quantitative observation endlessly repeated from within a homogenized culture, this phrase refers to the men in such a culture who have to be homogenized Dagwoods in order to belong at all. It is in our IQ testing that we have produced the greatest flood of misbegotten standards. Unaware of our typographic cultural bias, our testers assume that uniform and continuous habits are a sign of intelligence, thus eliminating the ear man and the tactile man.

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C. P. Snow, reviewing a book of A. L. Rowse (*The New York Times Book Review*, December 24, 1961) on Appeasement and the road to Munich, describes the top level of British brains and experience in the 1930s. "Their IQ's were much higher than usual among political bosses. Why were they such a disaster?" The view of Rowse, Snow approves: "They would not listen to warnings because they did not wish to hear." Being anti-Red made it impossible for them to read the message of Hitler. But their failure was as nothing compared to our present one. The American stake in literacy as a technology or uniformity applied to every level of education, government, industry, and social life is totally threatened by the electric technology. The threat of Stalin or Hitler was external. The electric technology is within the gates, and we are numb, deaf, blind, and

mute about its encounter with the Gutenberg technology, on and through which the American way of life was formed. It is, however, no time to suggest strategies when the threat has not even been acknowledged to exist. I am in the position of Louis Pasteur telling doctors that their greatest enemy was quite invisible, and quite unrecognized by them. Our conventional response to all media, namely that it is how they are used that counts, is the numb stance of the technological idiot. For the "content" of a medium is like the juicy piece of meat carried by the burglar to distract the watchdog of the mind. The effect of the medium is made strong and intense just because it is given another medium as "content." The content of a movie is a novel or a play or an opera. The effect of the movie form is not related to its program content. The "content" of writing or print is speech, but the reader is almost entirely unaware either of print or of speech.

Arnold Toynbee is innocent of any understanding of media as they have shaped history, but he is full of examples that the student of media can use. At one moment he can seriously suggest that adult education, such as the Workers Educational Association in Britain, is a useful counterforce to the popular press. Toynbee considers that although all of the oriental societies have in our time accepted the industrial technology and its political consequences: "On the cultural plane, however, there is no uniform corresponding tendency." (Somervell, I. 267) This is like the voice of the literate man, floundering in a milieu of ads, who boasts, "Personally, I pay no attention to ads." The spiritual and cultural reservations that the oriental peoples may have toward our technology will avail them not at all. The effects of technology do not occur at the level of opinions or concepts, but alter sense ratios or patterns of perception steadily and without any resistance. The serious artist is the only person able to encounter technology with impunity, just because he is an expert aware of the changes in sense perception.

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The operation of the money medium in seventeenth-century Japan had effects not unlike the operation of typography in the West. The penetration of the money economy, wrote G. B. Sansom (in Japan, Cresset Press, London, 1931) "caused a slow but irresistible revolution, culminating in the breakdown of feudal government and the resumption of intercourse with foreign countries after more than two hundred years of seclusion." Money has reorganized the sense life of peoples just because it is an extension of our sense lives. This change does not depend upon approval or disapproval of those living in the society.

Arnold Toynbee made one approach to the transforming power of media in his concept of "etherialization," which he holds to be the principle of progressive simplification and efficiency in any organization or technology. Typically, he is ignoring the effect of the challenge of these forms upon the response of our senses. He imagines that it is the response of our opinions that is relevant to the effect of media and technology in society, a "point of view" that is plainly the result of the typographic spell. For the man in a literate and homogenized society ceases to be sensitive to the diverse and discontinuous life of forms. He acquires the illusion of the third dimension and the "private point of view" as part of his Narcissus fixation, and is quite shut off from Blake's awareness or that of the Psalmist, that we become what we behold.

Today when we want to get our bearings in our own culture, and have need to stand aside from the bias and pressure exerted by any technical form of human expression, we have only to visit a society where that particular form has not been felt, or a historical period in which it was unknown. Professor Wilbur Schramm made such a tactical move in studying Television in the Lives of Our Children. He found areas where TV had not penetrated at all and ran some tests. Since he had made no study of the peculiar nature of the TV image, his tests were of "content" preferences, viewing time, and vocabulary counts. In a word, his approach to the problem was a literary one, albeit unconsciously so. Consequently, he had nothing to report. Had his methods been employed in 1500 AD to discover the effects of the printed book in the lives of children or adults, he could have found out nothing of the changes in human and social psychology resulting from typography. Print created individualism and nationalism in the sixteenth century. Program and "content" analysis offer no clues to the magic of these media or to their subliminal charge.

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Leonard Doob, in his report *Communication in Africa*, tells of one African who took great pains to listen each evening to the BBC news, even though he could understand nothing of it. Just to be in the presence of those sounds at 7 P.M. each day was important for him. His attitude to speech was like ours to melody -- the resonant intonation was meaning enough. In the seventeenth century our ancestors still shared this native's attitude to the forms of media, as is plain in the following sentiment of the Frenchman Bernard Lam expressed in *The Art of Speaking* (London, 1696):

'Tis an effect of the Wisdom of God, who created Man to be happy, that whatever is useful to his conversation (way of life) is agreeable to him . . . because all victual that conduces to nourishment is relishable, whereas other things that cannot be assimilated and be turned into our substance are insipid. A Discourse cannot be pleasant to the Hearer that is not easie to the Speaker; nor can it be easily pronounced unless it be heard with delight.

Here is an equilibrium theory of human diet and expression such as even now we are only striving to work out again for media after centuries of fragmentation and specialism.

Pope Pius XII was deeply concerned that there be serious study of the media today. On February 17, 1950, he said:

It is not an exaggeration to say that the future of modern society and the stability of its inner life depend in large part on the maintenance of an equilibrium between the strength of the techniques of communication and the capacity of the individual's own reaction.

Failure in this respect has for centuries been typical and total for mankind. Subliminal and docile acceptance of media impact has made them prisons without walls for their human users. As A. J. Liebling remarked in his book *The Press*, a man is not free if he cannot see where he is going, even if he has a gun to help him get there. For each of the media is also a powerful weapon with which to clobber other media and other groups. The result is that the present age has been one of multiple civil wars that are not limited

to the world of art and entertainment. In *War and Human Progress*, Professor J. U. Nef declared: "The total wars of our time have been the result of a series of intellectual mistakes . . ."

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If the formative power in the media are the media themselves, that raises a host of large matters that can only be mentioned here, although they deserve volumes. Namely, that technological media are staples or natural resources, exactly as are coal and cotton and oil. Anybody will concede that society whose economy is dependent upon one or two major staples like cotton, or grain, or lumber, or fish, or cattle is going to have some obvious social patterns of organization as a result. Stress on a few major staples creates extreme instability in the economy but great endurance in the population. The pathos and humor of the American South are embedded in such an economy of limited staples. For a society configured by reliance on a few commodities accepts them as a social bond quite as much as the metropolis does the press. Cotton and oil, like radio and TV, become "fixed charges" on the entire psychic life of the community. And this pervasive fact creates the unique cultural flavor of any society. It pays through the nose and all its other senses for each staple that shapes its life.

That our human senses, of which all media are extensions, are also fixed charges on our personal energies, and that they also configure the awareness and experience of each one of us, may be perceived in another connection mentioned by the psychologist C. G. Jung:

Every Roman was surrounded by slaves. The slave and his psychology flooded ancient Italy, and every Roman became inwardly, and of course unwittingly, a slave. Because living constantly in the atmosphere of slaves, he became infected through the unconscious with their psychology. No one can shield himself from such an influence (*Contributions to Analytical Psychology*, London, 1928).

Media Hot and Cold /22

2. Media Hot and Cold

"The rise of the waltz," explained Curt Sachs in the *World History of the Dance*, "was a result of that longing for truth, simplicity, closeness to nature, and primitivism, which the last two-thirds of the eighteenth century fulfilled." In the century of jazz we are likely to overlook the emergence of the waltz as a hot and explosive human expression that broke through the formal feudal barriers of courtly and choral dance styles.

Media Hot and Cold /23

There is a basic principle that distinguishes a hot medium like radio from a cool one like the telephone, or a hot medium like the movie from a cool one like TV. A hot medium is one that extends one single sense in "high definition." High definition is the state of being well filled with data. A photograph is, visually, "high definition." A cartoon is "low definition," simply because very little visual information is provided. Telephone is a cool medium, or one of low definition, because the ear is given a meager amount of

information. And speech is a cool medium of low definition, because so little is given and so much has to be filled in by the listener. On the other hand, hot media do not leave so much to be filled in or completed by the audience. Hot media are, therefore, low in participation, and cool media are high in participation or completion by the audience. Naturally, therefore, a hot medium like radio has very different effects on the user from a cool medium like the telephone.

A cool medium like hieroglyphic or ideogrammic written characters has very different effects from the hot and explosive medium of the phonetic alphabet. The alphabet, when pushed to a high degree of abstract visual intensity, became typography. The printed word with its specialist intensity burst the bonds of medieval corporate guilds and monasteries, creating extreme individualist patterns of enterprise and monopoly. But the typical reversal occurred when extremes of monopoly brought back the corporation, with its impersonal empire over many lives. The hotting-up of the medium of writing to repeatable print intensity led to nationalism and the religious wars of the sixteenth century. The heavy and unwieldy media, such as stone, are time binders. Used for writing, they are very cool indeed, and serve to unify the ages; whereas paper is a hot medium that serves to unify spaces horizontally, both in political and entertainment empires.

Media Hot and Cold /24

Any hot medium allows of less participation than a cool one, as a lecture makes for less participation than a seminar, and a book for less than dialogue. With print many earlier forms were excluded from life and art, and many were given strange new intensity. But our own time is crowded with examples of the principle that the hot form excludes, and the cool one includes. When ballerinas began to dance on their toes a century ago, it was felt that the art of the ballet had acquired a new "spirituality." With this new intensity, male figures were excluded from ballet. The role of women had also become fragmented with the advent of industrial specialism and the explosion of home functions into laundries, bakeries, and hospitals on the periphery of the community. Intensity or high definition engenders specialism and fragmentation in living as in entertainment, which explains why any intense experience must be "forgotten," "censored," and reduced to a very cool state before it can be "learned" or assimilated. The Freudian "censor" is less of a moral function than an indispensable condition of learning. Were we to accept fully and directly every shock to our various structures of awareness, we would soon be nervous wrecks, doing double-takes and pressing panic buttons every minute. The "censor" protects our central system of values, as it does our physical nervous system by simply cooling off the onset of experience a great deal. For many people, this cooling system brings on a lifelong state of psychic rigor mortis, or of somnambulism, particularly observable in periods of new technology.

An example of the disruptive impact of a hot technology succeeding a cool one is given by Robert Theobald in *The Rich and the Poor*. When Australian natives were given steel axes by the missionaries, their culture, based on the stone axe, collapsed. The stone axe had not only been scarce but had always been a basic status symbol of male importance. The missionaries provided quantities of sharp steel axes and gave them to women and children. The men had even to borrow these from the women, causing a collapse of male dignity. A tribal and feudal hierarchy of traditional kind collapses quickly when it meets any hot medium of the mechanical, uniform, and repetitive kind. The medium of

money or wheel or writing, or any other form of specialist speed up of exchange and information, will serve to fragment a tribal structure. Similarly, a very much greater speed-up, such as occurs with electricity, may serve to restore a tribal pattern of intense involvement such as took place with the introduction of radio in Europe, and is now tending to happen as a result of TV in America. Specialist technologies detribalize. The nonspecialist electric technology retribualizes. The process of upset resulting from a new distribution of skills is accompanied by much culture lag in which people feel compelled to look at new situations as if they were old ones, and come up with ideas of "population explosion" in an age of implosion. Newton, in an age of clocks, managed to present the physical universe in the image of a clock.

Media Hot and Cold /25

But poets like Blake were far ahead of Newton in their response to the challenge of the clock. Blake spoke of the need to be delivered "from single vision and Newton's sleep," knowing very well that Newton's response to the challenge of the new mechanism was itself merely a mechanical repetition of the challenge. Blake saw Newton and Locke and others as hypnotized Narcissus types quite unable to meet the challenge of mechanism. W. B. Yeats gave the full Blakean version of Newton and Locke in a famous epigram:

Locke sank into a swoon;
The garden died;
God took the spinning jenny
Out of his side.

Yeats presents Locke, the philosopher of mechanical and lineal associationism, as hypnotized by his own image. The "garden," or unified consciousness, ended. Eighteenth century man got an extension of himself in the form of the spinning machine that Yeats endows with its full sexual significance. Woman, herself, is thus seen as a technological extension of man's being.

Blake's counterstrategy for his age was to meet mechanism with organic myth. Today, deep in the electric age, organic myth is itself a simple and automatic response capable of mathematical formulation and expression, without any of the imaginative perception of Blake about it. Had he encountered the electric age, Blake would not have met its challenge with a mere repetition of electric form. For myth is the instant vision of a complex process that ordinarily extends over a long period. Myth is contraction or implosion of any process, and the instant speed of electricity confers the mythic dimension on ordinary industrial and social action today. We live mythically but continue to think fragmentarily and on single planes.

Media Hot and Cold /26

Scholars today are acutely aware of a discrepancy between their ways of treating subjects and the subject itself. Scriptural scholars of both the Old and New Testaments frequently say that while their treatment must be linear, the subject is not. The subject treats of the relations between God and man, and between God and the world, and of the relations between man and his neighbor - all these subsist together, and act and react upon one another at the same time. The Hebrew and Eastern mode of thought tackles

problem and resolution, at the outset of a discussion, in a way typical of oral societies in general. The entire message is then traced and retraced, again and again, on the rounds of a concentric spiral with seeming redundancy. One can stop anywhere after the first few sentences and have the full message, if one is prepared to "dig" it. This kind of plan seems to have inspired Frank Lloyd Wright in designing the Guggenheim Art Gallery on a spiral, concentric basis. It is a redundant form inevitable to the electric age, in which the concentric pattern is imposed by the instant quality, and overlay in depth, of electric speed. But the concentric with its endless intersection of planes is necessary for insight. In fact, it is the technique of insight, and as such is necessary for media study, since no medium has its meaning or existence alone, but only in constant interplay with other media.

The new electric structuring and configuring of life more and more encounters the old lineal and fragmentary procedures and tools of analysis from the mechanical age. More and more we turn from the content of messages to study total effect. Kenneth Boulding put this matter in *The Image* by saying, "The meaning of a message is the change which it produces in the image." Concern with effect rather than meaning is a basic change of our electric time, for effect involves the total situation, and not a single level of information movement. Strangely, there is recognition of this matter of effect rather than information in the British idea of libel: "The greater the truth, the greater the libel."

Media Hot and Cold /27

The effect of electric technology had at first been anxiety. Now it appears to create boredom. We have been through the three stages of alarm, resistance, and exhaustion that occur in every disease or stress of life, whether individual or collective. At least, our exhausted slump after the first encounter with the electric has inclined us to expect new problems. However, backward countries that have experienced little permeation with our own mechanical and specialist culture are much better able to confront and to understand electric technology. Not only have backward and nonindustrial cultures no specialist habits to overcome in their encounter with electromagnetism, but they have still much of their traditional oral culture that has the total, unified "field" character of our new electromagnetism. Our old industrialized areas, having eroded their oral traditions automatically, are in the position of having to rediscover them in order to cope with the electric age.

In terms of the theme of media hot and cold, backward countries are cool, and we are hot. The "city slicker" is hot, and the rustic is cool. But in terms of the reversal of procedures and values in the electric age, the past mechanical time was hot, and we of the TV age are cool. The waltz was a hot, fast mechanical dance suited to the industrial time in its moods of pomp and circumstance. In contrast, the Twist is a cool, involved and chatty form of improvised gesture. The jazz of the period of the hot new media of movie and radio was hot jazz. Yet jazz of itself tends to be a casual dialogue form of dance quite lacking in the repetitive and mechanical forms of the waltz. Cool jazz came in quite naturally after the first impact of radio and movie had been absorbed.

In the special Russian issue of *Life* magazine for September 13, 1963, it is mentioned in Russian restaurants and night clubs, "though the Charleston is tolerated, the Twist is taboo." All this is to say that a country in the process of industrialization is inclined to regard hot jazz as consistent with its developing programs. The cool and involved form

of the Twist, on the other hand, would strike such a culture at once as retrograde and incompatible with its new mechanical stress. The Charleston, with its aspect of a mechanical doll agitated by strings, appears in Russia as an avant-garde form. We, on the other hand, find the avant-garde in the cool and the primitive, with its promise of depth involvement and integral expression.

Media Hot and Cold /28

The "hard" sell and the "hot" line become mere comedy in the TV age, and the death of all the salesmen at one stroke of the TV axe has turned the hot American culture into a cool one that is quite unacquainted with itself. America, in fact, would seem to be living through the reverse process that Margaret Mead described in Time magazine (September 4, 1954): "There are too many complaints about society having to move too fast to keep up with the machine. There is great advantage in moving fast if you move completely, if social, educational, and recreational changes keep pace. You must change the whole pattern at once and the whole group together - and the people themselves must decide to move."

Margaret Mead is thinking here of change as uniform speed-up of motion or a uniform hotting-up of temperatures in backward societies. We are certainly coming within conceivable range of a world automatically controlled to the point where we could say, "Six hours less radio in Indonesia next week or there will be a great falling off in literary attention." Or, "We can program twenty more hours of TV in South Africa next week to cool down the tribal temperature raised by radio last week. Whole cultures could now be programmed to keep their emotional climate stable in the same way that we have begun to know some thing about maintaining equilibrium in the commercial economies of the world.

In the merely personal and private sphere we are often reminded of how changes of tone and attitude are demanded of different times and seasons in order to keep situations in hand. British clubmen, for the sake of companionship and amiability, have long excluded the hot topics of religion and politics from mention inside the highly participational club. In the same vein, W. H. Auden wrote, ". . . this season the man of goodwill will wear his heart up his sleeve, not on it . . . the honest manly style is today suited only to Iago" (Introduction to John Betjeman's *Slick But Not Streamlined*). In the Renaissance, as print technology hotted up the social milieu to a very high point, the gentleman and the courtier (Hamlet-Mercutio style) adopted, in contrast, the casual and cool nonchalance of the playful and superior being. The Iago allusion of Auden reminds us that Iago was the alter ego and assistant of the intensely earnest and very non-nonchalant General Othello. In imitation of the earnest and forthright general, Iago hotted up his own image and wore his heart on his sleeve, until General Othello read him loud and clear as "honest Iago," a man after his own grimly earnest heart.

Media Hot and Cold /29

Throughout *The City in History*, Lewis Mumford favors the cool or casually structured towns over the hot and intensely filled-in cities. The great period of Athens, he feels, was one during which most of the democratic habits of village life and participation still obtained. Then burst forth the full variety of human expression and exploration such as was later impossible in highly developed urban centers. For the highly developed

situation is, by definition, low in opportunities of participation, and rigorous in its demands of specialist fragmentation from those who would control it. For example, what is known as "job enlargement" today in business and in management consists in allowing the employee more freedom to discover and define his function. Likewise, in reading a detective story the reader participates as co-author simply because so much has been left out of the narrative. The open-mesh silk stocking is far more sensuous than the smooth nylon, just because the eye must act as hand in filling in and completing the image, exactly as in the mosaic of the TV image.

Douglas Cater in *The Fourth Branch of Government* tells how the men of the Washington press bureaus delighted to complete or fill in the blank of Calvin Coolidge's personality. Because he was so like a mere cartoon, they felt the urge to complete his image for him and his public. It is instructive that the press applied the word "cool" to Cal. In the very sense of a cool medium, Calvin Coolidge was so lacking in any articulation of data in his public image that there was only one word for him. He was real cool. In the hot 1920s, the hot press medium found Cal very cool and rejoiced in his lack of image, since it compelled the participation of the press in filling in an image of him for the public. By contrast, F.D.R. was a hot press agent, himself a rival of the newspaper medium and one who delighted in scoring off the press on the rival hot medium of radio. Quite in contrast, Jack Paar ran a cool show for the cool TV medium, and became a rival for the patrons of the night spots and their allies in the gossip columns. Jack Paar's war with the gossip columnists was a weird example of clash between a hot and cold medium such as had occurred with the "scandal of the rigged TV quiz shows." The rivalry between the hot press and radio media, on one hand, and TV on the other, for the hot ad buck, served to confuse and to overheat the issues in the affair that pointlessly involved Charles van Doren.

Media Hot and Cold /30

An Associated Press story from Santa Monica, California, August 9, 1962, reported how:

Nearly 100 traffic violators watched a police traffic accident film today to atone for their violations. Two had to be treated for nausea and shock . . .

Viewers were offered a 50% reduction in fines if they agreed to see the movie, *Signal 30*, made by Ohio State police.

It showed twisted wreckage and mangled bodies and recorded the screams of accident victims.

Whether the hot film medium using hot content would cool off the hot drivers is a moot point. But it does concern any understanding of media. The effect of hot media treatment cannot include much empathy or participation at any time. In this connection an insurance ad that featured Dad in an iron lung surrounded by a joyful family group did more to strike terror into the reader than all the warning wisdom in the world. It is a question that arises in connection with capital punishment. Is a severe penalty the best deterrent to serious crime? With regard to the bomb and the cold war, is the threat of massive retaliation the most effective means to peace? Is it not evident in every human situation that is pushed to a point of saturation that some precipitation occurs? When all

the available resources and energies have been played up in an organism or in any structure there is some kind of reversal of pattern. The spectacle of brutality used as deterrent can brutalize. Brutality used in sports may humanize under some conditions, at least. But with regard to the bomb and retaliation as deterrent, it is obvious that numbness is the result of any prolonged terror, a fact that was discovered when the fall out shelter program was broached. The price of eternal vigilance is indifference.

Media Hot and Cold /31

Nevertheless, it makes all the difference whether a hot medium is used in a hot or a cool culture. The hot radio medium used in cool or nonliterate cultures has a violent effect, quite unlike its effect, say in England or America, where radio is felt as entertainment. A cool or low literacy culture cannot accept hot media like movies or radio as entertainment. They are, at least, as radically upsetting for them as the cool TV medium has proved to be for our high literacy world.

And as for the cool war and the hot bomb scare, the cultural strategy that is desperately needed is humor and play. It is play that cools off the hot situations of actual life by miming them. Competitive sports between Russia and the West will hardly serve that purpose of relaxation. Such sports are inflammatory, it is plain. And what we consider entertainment or fun in our media inevitably appears as violent political agitation to a cool culture.

One way to spot the basic difference between hot and cold media uses is to compare and contrast a broadcast of a symphony performance with a broadcast of a symphony rehearsal. Two of the finest shows ever released by the CBC were of Glenn Gould's procedure in recording piano recitals, and Igor Stravinsky's rehearsing the Toronto symphony in some of his new work. A cool medium like TV, when really used, demands this involvement in process. The neat tight package is suited to hot media, like radio and gramophone. Francis Bacon never tired of contrasting hot and cool prose. Writing in "methods" or complete packages, he contrasted with writing in aphorisms, or single observations such as "Revenge is a kind of wild justice." The passive consumer wants packages, but those, he suggested, who are concerned in pursuing knowledge and in seeking causes will resort to aphorisms, just because they are incomplete and require participation in depth.

The principle that distinguishes hot and cold media is perfectly embodied in the folk wisdom: "Men seldom make passes at girls who wear glasses." Glasses intensify the outward-going vision, and fill in the feminine image exceedingly, Marion the Librarian notwithstanding. Dark glasses, on the other hand, create the inscrutable and inaccessible image that invites a great deal of participation and completion.

Media Hot and Cold /32

Again, in a visual and highly literate culture, when we meet a person for the first time his visual appearance dims out the sound of the name, so that in self-defense we add: "How do you spell your name?" Whereas, in an ear culture, the sound of a man's name is the overwhelming fact, as Joyce knew when he said in *Finnegans Wake*, "Who gave you that name?" For the name of a man is a numbing blow from which he never recovers.

Another vantage point from which to test the difference between hot and cold media is the practical joke. The hot literary medium excludes the practical and participant aspect of the joke so completely that Constance Rourke, in her *American Humor*, considers it as no joke at all. To literary people, the practical joke with its total physical involvement is as distasteful as the pun that derails us from the smooth and uniform progress that is typographic order. Indeed, to the literary person who is quite unaware of the intensely abstract nature of the typographic medium, it is the grosser and participant forms of art that seem "hot," and the abstract and intensely literary form that seems "cool." "You may perceive, Madam," said Dr. Johnson, with a pugilistic smile, "that I am well-bred to a degree of needless scrupulosity." And Dr. Johnson was right in supposing that "well-bred" had come to mean a white-shined stress on attire that rivaled the rigor of the printed page. "Comfort" consists in abandoning a visual arrangement in favor of one that permits casual participation of the senses, a state that is excluded when any one sense, but especially the visual sense, is hotted up to the point of dominant command of a situation.

On the other hand, in experiments in which all outer sensation is withdrawn, the subject begins a furious fill-in or completion of senses that is sheer hallucination. So the hotting-up of one sense tends to effect hypnosis, and the cooling of all senses tends to result in hallucination.

Reversal of the Overheated Medium /33

3. Reversal of the Overheated Medium

A headline for June 21, 1963, read:

WASHINGTON-MOSCOW HOT LINE TO OPEN IN 60 DAYS

The Times of London Service, Geneva:

The agreement to establish a direct communication link between Washington and Moscow for emergencies was signed here yesterday by Charles Stelle of the United States and Semyon Tsarapkin of the Soviet Union. The link, known as the hot line, will be opened within sixty days according to U.S. officials. It will make use of leased commercial circuits, one cable and the other wireless using teleprinter equipment.

The decision to use the hot printed medium in place of the cool, participational, telephone medium is unfortunate in the extreme. No doubt the decision was prompted by the literary bias of the West for the printed form, on the ground that it is more impersonal than the telephone.

Reversal of the Overheated Medium /34

The printed form has quite different implications in Moscow from what it has in Washington. So with the telephone. The Russians' love of this instrument, so congenial to their oral traditions, is owing to the rich nonvisual involvement it affords. The Russian uses the telephone for the sort of effects we associate with the eager conversation of the lapel-gripper whose face is twelve inches away.

Both telephone and teleprinter as amplifications of the unconscious cultural bias of Moscow, on one hand, and of Washington, on the other, are invitations to monstrous misunderstandings. The Russian bugs rooms and spies by ear, finding this quite natural. He is outraged by our visual spying, however, finding this quite unnatural.

The principle that during the stages of their development all things appear under forms opposite to those that they finally present is an ancient doctrine. Interest in the power of things to reverse themselves by evolution is evident in a great diversity of observations, sage and jocular Alexander Pope wrote

Vice is a monster of such frightful mien
As to be hated needs but to be seen;
But seen too oft, familiar with its face,
We first endure, then pity, then embrace.

A caterpillar gazing at the butterfly is supposed to have remarked. "Well, you'll never catch me in one of those durn things."

At another level we have seen in this century the change over from the debunking of traditional myths and legends to their reverent study. As we begin to react in depth to the social life and problems of our global village, we become reactionaries. Involvement that goes with our instant technologies transforms the most "socially conscious" people into conservatives. When Sputnik had first gone into orbit a schoolteacher asked her second-graders to write some verse of the subject. One child wrote:

The stars are so big,
The earth is so small,
Stay as you are.

Reversal of the Overheated Medium /35

With man his knowledge and the process of obtaining knowledge are of equal magnitude. Our ability to apprehend galaxies and subatomic structures, as well, is a movement of faculties that include and transcend them. The second-grader who wrote the words above lives in a world much vaster than any which a scientist today has instruments to measure, or concepts to describe. As W. B. Yeats wrote of this reversal, "The visible world is no longer a reality and the unseen world is no longer a dream."

Associated with this transformation of the real world into science fiction is the reversal now proceeding apace, by which the Western world is going Eastern, even as the East goes Western. Joyce encoded this reciprocal reverse in his cryptic phrase:

The West shall shake the East awake
While ye have the night for morn.

The title of his *Finnegans Wake* is a set of multi-leveled puns on the reversal by which Western man enters his tribal, or Finn, cycle once more, following the track of the old Finn, but wide awake this time as we re-enter the tribal night. It is like our contemporary consciousness of the Unconscious.

The stepping-up of speed from the mechanical to the instant electric form reverses explosion into implosion. In our present electric age the imploding or contracting energies of our world now clash with the old expansionist and traditional patterns of organization. Until recently our institutions and arrangements, social, political, and economic, had shared a one-way pattern. We still think of it as "explosive," or expansive; and though it no longer obtains, we still talk about the population explosion and the explosion in learning. In fact, it is not the increase of numbers in the world that creates our concern with population. Rather, it is the fact that everybody in the world has to live in the utmost proximity created by our electric involvement in one another's lives. In education, likewise, it is not the increase in numbers of those seeking to learn that creates the crisis. Our new concern with education follows upon the changeover to an interrelation in knowledge, where before the separate subjects of the curriculum had stood apart from each other. Departmental sovereignties have melted away as rapidly as national sovereignties under conditions of electric speed. Obsession with the older patterns of mechanical, one-way expansion from centers to margins is no longer relevant to our electric world. Electricity does not centralize, but decentralizes. It is like the difference between a railway system and an electric grid system: the one requires railheads and big urban centers. Electric power, equally available in the farmhouse and the Executive Suite, permits any place to be a center, and does not require large aggregations. This reverse pattern appeared quite early in electrical "labor-saving" devices, whether a toaster or washing machine or vacuum cleaner. Instead of saving work, these devices permit everybody to do his own work. What the nineteenth century had delegated to servants and housemaids we now do for ourselves. This principle applies in toto in the electric age. In politics, it permits Castro to exist as independent nucleus or center. It would permit Quebec to leave the Canadian union in a way quite inconceivable under the regime of the railways. The railways require a uniform political and economic space. On the other hand, airplane and radio permit the utmost discontinuity and diversity in spatial organization.

Today the great principle of classical physics and economics and political science, namely that of the divisibility of each process, has reversed itself by sheer extension into the unified field theory; and automation in industry replaces the divisibility of process with the organic interlacing of all functions in the complex. The electric tape succeeds the assembly line.

In the new electric Age of Information and programmed production, commodities themselves assume more and more the character of information, although this trend appears mainly in the increasing advertising budget. Significantly, it is those commodities that are most used in social communication, cigarettes, cosmetics, and soap (cosmetic removers) that bear much of the burden of the upkeep of the media in general. As electric information levels rise, almost any kind of material will serve any kind of need or function, forcing the intellectual more and more into the role of social command and into the service of production.

It was Julien Benda's Great Betrayal that helped to clarify the new situation in which the intellectual suddenly holds the whip hand in society. Benda saw that the artists and

intellectuals who had long been alienated from power, and who since Voltaire had been in opposition, had now been drafted for service in the highest echelons of decision-making. Their great betrayal was that they had surrendered their autonomy and had become the flunkies of power, as the atomic physicist at the present moment is the flunky of the war lords.

Had Benda known his history, he would have been less angry and less surprised. For it has always been the role of intelligentsia to act as liaison and as mediators between old and new power groups. Most familiar of such groups is the case of the Greek slaves, who were for long the educators and confidential clerks of the Roman power. And it is precisely this servile role of the confidential clerk to the tycoon - commercial, military, or political - that the educator has continued to play in the Western world until the present moment. In England "the Angries" were a group of such clerks who had suddenly emerged from the lower echelons by the educational escape hatch. As they emerged into the upper world of power, they found that the air was not at all fresh or bracing. But they lost their nerve even quicker than Bernard Shaw lost his. Like Shaw, they quickly settled down to whimsy and to the cultivation of entertainment values.

In his *Study of History*, Toynbee notes a great many reversals of form and dynamic, as when, in the middle of the fourth century AD the Germans in the Roman service began abruptly to be proud of their tribal names and to retain them. Such a moment marked new confidence born of saturation with Roman values, and it was a moment marked by the complementary Roman swing toward primitive values. (As Americans saturate with European values, especially since TV, they begin to insist upon American coach lamps, hitching posts, and colonial kitchenware as cultural objects.) Just as the barbarians got to the top of the Roman social ladder, the Romans themselves were disposed to assume the dress and manners of tribesmen out of the same frivolous and snobbish spirit that attached the French court of Louis XVI to the world of shepherds and shepherdesses. It would have seemed a natural moment for the intellectuals to have taken over while the governing class was touring Disneyland, as it were. So it must have appeared to Marx and his followers. But they reckoned without understanding the dynamics of the new media of communication. Marx based his analysis most untimely on the machine, just as the telegraph and other implosive forms began to reverse the mechanical dynamic.

Reversal of the Overheated Medium /38

The present chapter is concerned with showing that in any medium or structure there is what Kenneth Boulding calls a "break boundary at which the system suddenly changes into an other or passes some point of no return in its dynamic processes." Several such "break boundaries" will be discussed later, including the one from stasis to motion, and from the mechanical to the organic in the pictorial world. One effect of the static photo had been to suppress the conspicuous consumption of the rich, but the effect of the speed-up of the photo had been to provide fantasy riches for the poor of the entire globe.

Today the road beyond its break boundary turns cities into highways, and the highway proper takes on a continuous urban character. Another characteristic reversal after passing a road break boundary is that the country ceases to be the center of all work, and the city ceases to be the center of leisure. In fact, improved roads and transport have reversed the ancient pattern and made cities the centers of work and the country the place of leisure and of recreation.

Earlier, the increase of traffic that came with money and roads had ended the static tribal state (as Toynbee calls the nomadic food-gathering culture). Typical of the reversing that occurs at break boundaries is the paradox that nomadic mobile man, the hunter and food-gatherer, is socially static. On the other hand, sedentary, specialist man is dynamic, explosive, progressive. The new magnetic or world city will be static and iconic or inclusive.

Reversal of the Overheated Medium /39

In the ancient world the intuitive awareness of break boundaries as points of reversal and of no return was embodied in the Greek idea of hubris, which Toynbee presents in his Study of History, under the head of "The Nemesis of Creativity" and "The Reversal of Roles." The Greek dramatists presented the idea of creativity as creating, also, its own kind of blindness, as in the case of Oedipus Rex, who solved the riddle of the Sphinx. It was as if the Greeks felt that the penalty for one break-through was a general sealing-off of awareness to the total field. In a Chinese work - The Way and Its Power (A. Waley translation) - there is a series of instances of the overheated medium, the overextended man or culture, and the peripety or reversal that inevitably follows:

He who stands on tiptoe does not stand firm;
He who takes the longest strides does not walk the fastest . . .
He who boasts of what he will do succeeds in nothing;
He who is proud of his work achieves nothing that endures.

One of the most common causes of breaks in any system is the cross- fertilization with another system, such as happened to print with the steam press, or with radio and movies (that yielded the talkies). Today with microfilm and micro-cards, not to mention electric memories, the printed word assumes again much of the handicraft character of a manuscript. But printing from movable type was, itself, the major break boundary in the history of phonetic literacy, just as the phonetic alphabet had been the break boundary between tribal and individualist man.

The endless reversals or break boundaries passed in the inter play of the structures of bureaucracy and enterprise include the point at which individuals began to be held responsible and accountable for their "private actions." That was the moment of the collapse of tribal collective authority. Centuries later, when further explosion and expansion had exhausted the powers of private action, corporate enterprise invented the idea of Public Debt, making the individual privately accountable for group action.

Reversal of the Overheated Medium /40

As the nineteenth century heated up the mechanical and dissociative procedures of technical fragmentation, the entire attention of men turned to the associative and the corporate. In the first great age of the substitution of machine for human toil. Carlyle and the Pre-Raphaelites promulgated the doctrine of Work as a mystical social communion, and millionaires like Ruskin and Morris toiled like navvies for esthetic reasons. Marx was an impressionable recipient of these doctrines. Most bizarre of all the reversals in the great Victorian age of mechanization and high moral tone is the counter-strategy of Lewis Carroll and Edward Lear, whose nonsense has proved exceedingly

durable. While the Lord Cardigans were taking their blood baths in the Valley of Death, Gilbert and Sullivan were announcing that the boundary break had been passed.

The Gadget Lover /41

4. The Gadget Lover: Narcissus as Narcosis

The Greek myth of Narcissus is directly concerned with a fact of human experience, as the word Narcissus indicates. It is from the Greek word narcosis, or numbness. The youth Narcissus mistook his own reflection in the water for another person. This extension of himself by mirror numbed his perceptions until he became the servomechanism of his own extended or repeated image. The nymph Echo tried to win his love with fragments of his own speech, but in vain. He was numb. He had adapted to his extension of himself and had become a closed system.

Now the point of this myth is the fact that men at once become fascinated by any extension of themselves in any material other than themselves. There have been cynics who insisted that men fall deepest in love with women who give them back their own image. Be that as it may, the wisdom of the Narcissus myth does not convey any idea that Narcissus fell in love with anything he regarded as himself. Obviously he would have had very different feelings about the image had he known it was an extension or repetition of himself. It is, perhaps, indicative of the bias of our intensely technological and, therefore, narcotic culture that we have long interpreted the Narcissus story to mean that he fell in love with himself, that he imagined the reflection to be Narcissus!

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Physiologically there are abundant reasons for an extension of ourselves involving us in a state of numbness. Medical researchers like Hans Selye and Adolphe Jonas hold that all extensions of ourselves, in sickness or in health, are attempts to maintain equilibrium. Any extension of ourselves they regard as "autoamputation," and they find that the autoamputative power or strategy is resorted to by the body when the perceptual power cannot locate or avoid the cause of irritation. Our language has many expressions that indicate this self- amputation that is imposed by various pressures. We speak of "wanting to jump out of my skin" or of "going out of my mind," being "driven batty" or "flipping my lid." And we often create artificial situations that rival the irritations and stresses of real life under controlled conditions of sport and play.

While it was no part of the intention of Jonas and Selye to provide an explanation of human invention and technology, they have given us a theory of disease (discomfort) that goes far to explain why man is impelled to extend various parts of his body by a kind of autoamputation. In the physical stress of superstimulation of various kinds, the central nervous system acts to protect itself by a strategy of amputation or isolation of the offending organ, sense, or function. Thus, the stimulus to new invention is the stress of acceleration of pace and increase of load. For example, in the case of the wheel as an extension of the foot, the pressure of new burdens resulting from the acceleration of exchange by written and monetary media was the immediate occasion of the extension or "amputation" of this function from our bodies. The wheel as a counter- irritant to increased burdens, in turn, brings about a new intensity of action by its amplification of

a separate or isolated function (the feet in rotation). Such amplification is bearable by the nervous system only through numbness or blocking of perception. This is the sense of the Narcissus myth. The young man's image is a self-amputation or extension induced by irritating pressures. As counter-irritant, the image produces a generalized numbness or shock that declines recognition. Self-amputation forbids self-recognition.

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The principle of self-amputation as an immediate relief of strain on the central nervous system applies very readily to the origin of the media of communication from speech to computer.

Physiologically, the central nervous system, that electric network that coordinates the various media of our senses, plays the chief role. Whatever threatens its function must be contained, localized, or cut off, even to the total removal of the offending organ. The function of the body, as a group of sustaining and protective organs for the central nervous system; is to act as buffers against sudden variations of stimulus in the physical and social environment. Sudden social failure or shame is a shock that some may "take to heart" or that may cause muscular disturbance in general, signaling for the person to withdraw from the threatening situation.

Therapy, whether physical or social, is a counter-irritant that aids in that equilibrium of the physical organs which protect the central nervous system. Whereas pleasure is a counter-irritant (e.g., sports, entertainment, and alcohol), comfort is the removal of irritants. Both pleasure and comfort are strategies of equilibrium for the central nervous system.

With the arrival of electric technology, man extended, or set outside himself, a live model of the central nervous system itself. To the degree that this is so, it is a development that suggests a desperate and suicidal autoamputation, as if the central nervous system could no longer depend on the physical organs to be protective buffers against the slings and arrows of outrageous mechanism. It could well be that the successive mechanizations of the various physical organs since the invention of printing have made too violent and superstimulated a social experience for the central nervous system to endure.

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In relation to that only too plausible cause of such development, we can return to the Narcissus theme. For if Narcissus is numbed by his self-amputated image, there is a very good reason for the numbness. There is a close parallel of response between the patterns of physical and psychic trauma or shock. A person suddenly deprived of loved ones and a person who drops a few feet unexpectedly will both register shock. Both the loss of family and a physical fall are extreme instances of amputations of the self. Shock induces a generalized numbness or an increased threshold to all types of perception. The victim seems immune to pain or sense.

Battle shock created by violent noise has been adapted for dental use in the device known as audioc. The patient puts on headphones and turns a dial raising the noise level to the point that he feels no pain from the drill. The selection of a single sense for

intense stimulus, or of a single extended, isolated, or "amputated" sense in technology, is in part the reason for the numbing effect that technology as such has on its makers and users. For the central nervous system rallies a response of general numbness to the challenge of specialized irritation.

The person who falls suddenly experiences immunity to all pain or sensory stimuli because the central nervous system has to be protected from any intense thrust of sensation. Only gradually does he regain normal sensitivity to sights and sounds, at which time he may begin to tremble and perspire and to react as he would have done if the central nervous system had been prepared in advance for the fall that occurred unexpectedly.

Depending on which sense or faculty is extended technologically, or "autoamputated," the "closure" or equilibrium-seeking among the other senses is fairly predictable. It is with the senses as it is with color. Sensation is always 100 per cent, and a color is always 100 per cent color. But the ratio among the components in the sensation or the color can differ infinitely. Yet if sound, for example, is intensified, touch and taste and sight are affected at once. The effect of radio on literate or visual man was to reawaken his tribal memories, and the effect of sound added to motion pictures was to diminish the role of mime, tactility, and kinesthesia. Similarly, when nomadic man turned to sedentary and specialist ways, the senses specialized too. The development of writing and the visual organization of life made possible the discovery of individualism, introspection and so on.

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Any invention or technology is an extension or self-amputation of our physical bodies, and such extension also demands new ratios or new equilibriums among the other organs and extensions of the body. There is, for example, no way of refusing to comply with the new sense ratios or sense "closure" evoked by the TV image. But the effect of the entry of the TV image will vary from culture to culture in accordance with the existing sense ratios in each culture. In audile-tactile Europe TV has intensified the visual sense, spurring them toward American styles of packaging and dressing. In America, the intensely visual culture, TV has opened the doors of audile-tactile perception to the nonvisual world of spoken languages and food and the plastic arts. As an extension and expeditor of the sense life, any medium at once affects the entire field of the senses, as the Psalmist explained long ago in the 115th Psalm:

Their idols are silver and gold,
The work of men's hands.
They have mouths, but they speak not;
Eyes they have, but they see not;
They have ears, but they hear not;
Noses have they, but they smell not;
They have hands, but they handle not;
Feet have they, but they walk not;
Neither speak they through their throat.
They that make them shall be like unto them;
Yea, every one that trusteth in them.

The concept of "idol" for the Hebrew Psalmist is much like that of Narcissus for the Greek mythmaker. And the Psalmist insists that the beholding of idols, or the use of technology, conforms men to them. "They that make them shall be like unto them." This is a simple fact of sense "closure." The poet Blake developed the Psalmist's ideas into an entire theory of communication and social change. It is in his long poem of Jerusalem that he explains why men have become what they have beheld.

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What they have, says Blake, is "the spectre of the Reasoning Power in Man" that has become fragmented and "separated from Imagination and enclosing itself as in steel." Blake, in a word, sees man as fragmented by his technologies. But he insists that these technologies are self-amputations of our own organs. When so amputated, each organ becomes a closed system of great new intensity that hurls man into "martyrdoms and wars." Moreover, Blake announces as his theme in Jerusalem the organs of perception:

If Perceptive Organs vary, Objects of Perception seem to vary:

If Perceptive Organs close, their Objects seem to close also.

To behold, use or perceive any extension of ourselves in technological form is necessarily to embrace it. To listen to radio or to read the printed page is to accept these extensions of ourselves into our personal system and to undergo the "closure" or displacement of perception that follows automatically. It is this continuous embrace of our own technology in daily use that puts us in the Narcissus role of subliminal awareness and numbness in relation to these images of ourselves. By continuously embracing technologies, we relate ourselves to them as servomechanisms. That is why we must, to use them at all, serve these objects, these extensions of ourselves, as gods or minor religions. An Indian is the servo- mechanism of his canoe, as the cowboy of his horse or the executive of his clock.

Physiologically, man in the normal use of technology (or his variously extended body) is perpetually modified by it and in turn finds ever new ways of modifying his technology. Man becomes, as it were, the sex organs of the machine world, as the bee of the plant world, enabling it to fecundate and to evolve ever new forms. The machine world reciprocates man's love by expediting his wishes and desires, namely, in providing him with wealth. One of the merits of motivation research has been the revelation of man's sex relation to the motorcar.

Socially, it is the accumulation of group pressures and irritations that prompt invention and innovation as counter-irritants.

The Gadget Lover /47

War and the fear of war have always been considered the main incentives to technological extension of our bodies. Indeed, Lewis Mumford, in his *The City in History*, considers the walled city itself an extension of our skins, as much as housing and clothing. More even than the preparation for war, the aftermath of invasion is a rich technological period; because the subject culture has to adjust all its sense ratios to accommodate the impact of the invading culture. It is from such intensive hybrid exchange and strife of ideas and forms that the greatest social energies are released, and

from which arise the greatest technologies. Buckminster Fuller estimates that since 1910 the governments of the world have spent 3 1/2 trillion dollars on airplanes. That is 62 times the existing gold supply of the world.

The principle of numbness comes into play with electric technology, as with any other. We have to numb our central nervous system when it is extended and exposed, or we will die. Thus the age of anxiety and of electric media is also the age of the unconscious and of apathy. But it is strikingly the age of consciousness of the unconscious, in addition. With our central nervous system strategically numbed, the tasks of consciousness and order are transferred to the physical life of man, so that for the first time he has become aware of technology as an extension of his physical body. Apparently this could not have happened before the electric age gave us the means of instant, total field-awareness. With such awareness, the subliminal life, private and social, has been hoicked up into full view, with the result that we have "social consciousness" presented to us as a cause of guilt-feelings. Existentialism offers a philosophy of structures, rather than categories, and of total social involvement instead of the bourgeois spirit of individual separateness or points of view. In the electric age we wear all mankind as our skin.

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5. Hybrid Energy: Les Liasons Dangereuses

"For most of our lifetime civil war has been raging in the world of art and entertainment . . . Moving pictures, gramophone records, radio, talking pictures . . . This is the view of Donald McWhinnie, analyst of the radio medium. Most of this civil war affects us in the depths of our psychic lives, as well, since the war is conducted by forces that are extensions and amplifications of our own beings. Indeed, the interplay among media is only another name for this civil war" that rages in our society and our psyches alike.

"To the blind all things are sudden," it has been said. The crossings or hybridizations of the media release great new force and energy as by fission or fusion. There need be no blindness in these matters once we have been notified that there is anything to observe.

It has now been explained that media, or the extensions of man, are "make happen" agents, but not "make aware" agents.

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The hybridizing or compounding of these agents offers an especially favorable opportunity to notice their structural components and properties. "As the silent film cried out for sound, so does the sound film cry out for color," wrote Sergei Eisenstein in his Notes of a Film Director. This type of observation can be extended systematically to all media: "As the printing press cried out for nationalism, so did the radio cry out for tribalism." These media, being extensions of ourselves, also depend upon us for their interplay and their evolution. The fact that they do interact and spawn new progeny has been a source of wonder over the ages. It need baffle us no longer if we trouble to scrutinize their action. We can, if we choose, think things out before we put them out.

Plato, in all his striving to imagine an ideal training school, failed to notice that Athens was a greater school than any university even he could dream up. In other words, the greatest school had been put out for human use before it has been thought out. Now, this is especially true of our media. They are put out long before they are thought out. In fact, their being put outside us tends to cancel the possibility of their being thought of at all.

Everybody notices how coal and steel and cars affect the arrangements of daily existence. In our time, study has finally turned to the medium of language itself as shaping the arrangements of daily life, so that society begins to look like a linguistic echo or repeat of language norms, a fact that has disturbed the Russian Communist party very deeply. Wedded as they are to nineteenth-century industrial technology as the basis of class liberation, nothing could be more subversive of the Marxian dialectic than the idea that linguistic media shape social development, as much as do the means of production.

In fact, of all the great hybrid unions that breed furious release of energy and change, there is none to surpass the meeting of literate and oral cultures. The giving to man of an eye for an ear by phonetic literacy is, socially and politically, probably the most radical explosion that can occur in any social structure. This explosion of the eye, frequently repeated in "backward areas," we call Westernization. With literacy now about to hybridize the cultures of the Chinese, the Indians, and the Africans, we are about to experience such a release of human power and aggressive violence as makes the previous history of phonetic alphabet technology seem quite tame.

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That is only the East side story, for the electric implosion now brings oral and tribal ear-culture to the literate West. Not only does the visual, specialist, and fragmented Westerner have now to live in closest daily association with all the ancient oral cultures of the earth, but his own electric technology now begins to translate the visual or eye man back into the tribal and oral pattern with its seamless web of kinship and interdependence.

We know from our own past the kind of energy that is released, as by fission, when literacy explodes the tribal or family unit. What do we know about the social and psychic energies that develop by electric fusion or implosion when literate individuals are suddenly gripped by an electromagnetic field, such as occurs in the new Common Market pressure in Europe? Make no mistake, the fusion of people who have known individualism and nationalism is not the same process as the fission of "backward" and oral cultures that are just coming to individualism and nationalism. It is the difference between the "A" bomb and the "H" bomb. The latter is more violent, by far. Moreover, the products of electric fusion are immensely complex, while the products of fission are simple. Literacy creates very much simpler kinds of people than those that develop in the complex web of ordinary tribal and oral societies. For the fragmented man creates the homogenized Western world, while oral societies are made up of people differentiated, not by their specialist skills or visible marks, but by their unique emotional mixes. The oral man's inner world is a tangle of complex emotions and feelings that the Western practical man has long ago eroded or suppressed within himself in the interest of efficiency and practicality.

The immediate prospect for literate, fragmented Western man encountering the electric implosion within his own culture is his steady and rapid transformation into a complex and depth structured person emotionally aware of his total interdependence with the rest of human society. Representatives of the older Western individualism are even now assuming the appearance, for good or ill, of Al Capp's General Bull Moose or of the John Birchers, tribally dedicated to opposing the tribal. Fragmented, literate, and visual individualism is not possible in an electrically patterned and imploded society. So what is to be done? Do we dare to confront such facts at the conscious level, or is it best to becloud and repress such matters until some violence releases us from the entire burden? For the fate of implosion and inter dependence is more terrible for Western man than the fate of explosion and independence for tribal man. It may be merely temperament in my own case, but I find some easing of the burden in just understanding and clarifying the issues. On the other hand, since consciousness and awareness seem to be a human privilege, may it not be desirable to extend this condition to our hidden conflicts, both private and social?

The present book, in seeking to understand many media, the conflicts from which they spring, and the even greater conflicts to which they give rise, holds out the promise of reducing these conflicts by an increase of human autonomy. Let us now note a few of the effects of media hybrids, or of the interpenetration of one medium by another.

Life at the Pentagon has been greatly complicated by jet travel, for example. Every few minutes an assembly gong rings to summon many specialists from their desks to hear a personal report from an expert from some remote part of the world. Meantime, the undone paper work mounts on each desk. And each department daily dispatches personnel by jet to remote areas for more data and reports. Such is the speed of this process of the meeting of the jet plane, the oral report, and the typewriter that those going forth to the ends of the earth often arrive unable to spell the name of the spot to which they have been sent as experts. Lewis Carroll pointed out that as large- scale maps got more and more detailed and extensive, they would tend to blanket agriculture and rouse the protest of farmers. So why not use the actual earth as a map of itself? We have reached a similar point of data gathering when each stick of chewing gum we reach for is acutely noted by some computer that translates our least gesture into a new probability curve or some parameter of social science. Our private and corporate lives have become informadon processes just because we have put our central nervous systems outside us in electric technology. That is the key to Professor Boorstin's bewilderment in *The Image, or What Happened to the American Dream*.

The electric light ended the regime of night and day, of indoors and out-of-doors. But it is when the light encounters already existing patterns of human organization that the hybrid energy is released. Cars can travel all night, ball players can play all night, and windows can be left out of buildings. In a word, the message of the electric light is total change. It is pure information without any content to restrict its transforming and informing power.

If the student of media will but meditate on the power of this medium of electric light to transform every structure of time and space and work and society that it penetrates or contacts, he will have the key to the form of the power that is in all media to reshape any lives that they touch. Except for light, all other media come in pairs, with one acting as the "content" of the other, obscuring the operation of both.

It is a peculiar bias of those who operate media for the owners that they be concerned about the program content of radio, or press, or film. The owners themselves are concerned more about the media as such, and are not inclined to go beyond "what the public wants" or some vague formula. Owners are aware of the media as power, and they know that this power has little to do with "content" or the media within the media.

When the press opened up the "human interest" keyboard after the telegraph had restructured the press medium, the news paper killed the theater, just as TV hit the movies and the night clubs very hard. George Bernard Shaw had the wit and imagination to fight back. He put the press into the theater, taking over the controversies and the human interest world of the press for the stage, as Dickens had done for the novel. The movie took over the novel and the newspaper and the stage, all at once. Then TV pervaded the movie and gave the theater-in-the-round back to the public.

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What I am saying is that media as extensions of our senses institute new ratios, not only among our private senses, but among themselves, when they interact among themselves. Radio changed the form of the news story as much as it altered the film image in the talkies. TV caused drastic changes in radio programming, and in the form of the thing or documentary novel.

It is the poets and painters who react instantly to a new medium like radio or TV. Radio and gramophone and tape recorder gave us back the poet's voice as an important dimension of the poetic experience. Words became a kind of painting with light, again. But TV, with its deep-participation mode, caused young poets suddenly to present their poems in cafes, in public parks, anywhere. After TV, they suddenly felt the need for personal contact with their public. (In print- oriented Toronto, poetry- reading in the public parks is a public offense. Religion and politics are permitted, but not poetry, as many young poets recently discovered.)

John O'Hara, the novelist, wrote in The New York Times Book Review of November 27, 1955:

You get a great satisfaction from a book. You know your reader is captive inside those covers, but as novelist you have to imagine the satisfaction he's getting. Now, in the theater well, I used to drop in during both productions of Pal Joey and watch, not imagine, the people enjoy it. I'd willingly start my next novel about a small town right now, but I need the diversion of a play.

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In our age artists are able to mix their media diet as easily as their book diet. A poet like Yeats made the fullest use of oral peasant culture in creating his literary effects. Quite

early, Eliot made a great impact by the careful use of jazz and film form. The Love Song of J. Alfred Prufrock gets much of its power from an interpenetration of film form and jazz idiom. But this mix reached its greatest power in *The Waste Land* and *Sweeney Agonistes*. Prufrock uses not only film form but the film theme of Charlie Chaplin, as did James Joyce in *Ulysses*. Joyce's Bloom is a deliberate takeover from Chaplin ("Chorney Choplain," as he called him in *Finnegans Wake*). And Chaplin, just as Chopin had adapted the pianoforte to the style of the ballet, hit upon the wondrous media mix of ballet and film in developing his Pavlova like alternation of ecstasy and waddle. He adopted the classical steps of ballet to a movie mime that converged exactly the right blend of the lyric and the ironic that is found also in Prufrock and *Ulysses*. Artists in various fields are always the first to discover how to enable one medium to use or to release the power of another. In a simpler form, it is the technique employed by Charles Boyer in his kind of French-English blend of urbane, throaty delirium.

The printed book had encouraged artists to reduce all forms of expression as much as possible to the single descriptive and narrative plane of the printed word. The advent of electric media released art from this straitjacket at once, creating the world of Paul Klee, Picasso, Braque, Eisenstein, the Marx Brothers, and James Joyce.

A headline in *The New York Times Book Review* (September 16, 1962) trills: There's Nothing Like a Best Seller to Set Hollywood a-Tingle.

Of course, nowadays, movie stars can only be lured from the beaches or science-fiction or some self-improvement course by the cultural lure of a role in a famous book. That is the way that the interplay of media now affects many in the movie colony. They have no more understanding of their media problems than does Madison Avenue. But from the point of view of the owners of the film and related media, the best seller is a form of insurance that some massive new gestalt or pattern has been isolated in the public psyche. It is an oil strike or a gold mine that can be depended on to yield a fair amount of boodle to the careful and canny processor. Hollywood bankers, that is, are smarter than literary historians, for the latter despise popular taste except when it has been filtered down from lecture course to literary handbook.

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Lillian Ross in *Picture* wrote a snide account of the filming of *The Red Badge of Courage*. She got a good deal of easy kudos for a foolish book about a great film by simply assuming the superiority of the literary medium to the film medium. Her book got much attention as a hybrid.

Agatha Christie wrote far above her usual good level in a group of twelve short stories about Hercule Poirot, called *The Labours of Hercules*. By adjusting the classical themes to make reasonable modern parallels, she was able to lift the detective form to extraordinary intensity.

Such was, also, the method of James Joyce in *Dubliners* and *Ulysses*, when the precise classical parallels created the true hybrid energy. Baudelaire, said Mr. Eliot, "taught us how to raise the imagery of common life to first intensity." It is done, not by any direct heave-ho of poetic strength, but by a simple adjustment of situations from one culture in hybrid form with those of another. It is precisely in this way that during wars and

migrations new cultural mix is the norm of ordinary daily life. Operations Research programs the hybrid principle as a technique of creative discovery.

When the movie scenario or picture story was applied to the idea article, the magazine world had discovered a hybrid that ended the supremacy of the short story. When wheels were put in tandem form, the wheel principle combined with the lineal typographic principle to create aerodynamic balance. The wheel crossed with industrial, lineal form released the new form of the airplane.

The hybrid or the meeting of two media is a moment of truth and revelation from which new form is born. For the parallel between two media holds us on the frontiers between forms that snap us out of the Narcissus- narcosis. The moment of the meeting of media is a moment of freedom and release from the ordinary trance and numbness imposed by them on our senses.

Media as Translators /56

6. Media as Translators

The tendency of neurotic children to lose neurotic traits when telephoning has been a puzzle to psychiatrists. Some stutterers lose their stutter when they switch to a foreign language. That technologies are ways of translating one kind of knowledge into another mode has been expressed by Lyman Bryson in the phrase "technology is explicitness." Translation is thus a "spell ing- out" of forms of knowing. What we call "mechanization" is a translation of nature, and of our own natures, into amplified and specialized forms. Thus the quip in Finnegans' Wake, "What bird has done yesterday man may do next year," is a strictly literal observation of the courses of technology. The power of technology as dependent on alternately grasping and letting go in order to enlarge the scope of action has been observed as the power of the higher arboreal apes as compared with those that are on the ground. Elias Canetti made the proper association of this power of the higher apes to grasp and let go, with the strategy of the stock market speculators. It is all capsulated in the popular variant on Robert Browning: "A man's reach must exceed his grasp or what's a metaphor." All media are active metaphors in their power to translate experience into new forms. The spoken word was the first technology by which man was able to let go of his environment in order to grasp it in a new way. Words are a kind of information retrieval that can range over the total environment and experience at high speed. Words are complex systems of metaphors and symbols that translate experience into our uttered or outered senses. They are a technology of explicitness. By means of translation of immediate sense experience into vocal symbols the entire world can be evoked and retrieved at any instant.

Media as Translators /57

In this electric age we see ourselves being translated more and more into the form of information, moving toward the technological extension of consciousness. That is what is meant when we say that we daily know more and more about man. We mean that we can translate more and more of ourselves into other forms of expression that exceed ourselves. Man is a form of expression who is traditionally expected to repeat himself

and to echo the praise of his Creator. "Prayer," said George Herbert, "is reversed thunder." Man has the power to reverberate the Divine thunder, by verbal translation.

By putting our physical bodies inside our extended nervous systems, by means of electric media, we set up a dynamic by which all previous technologies that are mere extensions of hands and feet and teeth and bodily heat- controls all such extensions of our bodies, including cities will be translated into information systems. Electromagnetic technology requires utter human docility and quiescence of meditation such as befits an organism that now wears its brain outside its shell and its nerves outside its hide. Man must serve his electric technology with the same servo- mechanistic fidelity with which he served his coracle, his canoe, his typography, and all other extensions of his physical organs. But there is this difference, that previous technologies were partial and fragmentary, and the electric is total and inclusive. An external consensus or conscience is now as necessary as private consciousness. With the new media, however, it is also possible to store and to translate everything; and, as for speed, that is no problem. No further acceleration is possible this side of the light barrier.

Media as Translators /58

Just as when information levels rise in physics and chemistry, it is possible to use anything for fuel or fabric or building material, so with electric technology all solid goods can be summoned to appear as solid commodities by means of information circuits set up in the organic patterns that we call "automation" and in information retrieval. Under electric technology the entire business of man becomes learning and knowing. In terms of what we still consider an "economy" (the Greek word for a household), this means that all forms of employment become "paid learning," and all forms of wealth result from the movement of information. The problem of discovering occupations or employment may prove as difficult as wealth is easy.

The long revolution by which men have sought to translate nature into art we have long referred to as "applied knowledge." "Applied" means translated or carried across from one kind of material form into another. For those who care to consider this amazing process of applied knowledge in Western civilization, Shakespeare's *As You Like It* provides a good deal to think about. His forest of Arden is just such a golden world of translated benefits and joblessness as we are now entering via the gate of electric automation.

It is no more than one would expect that Shakespeare should have understood the Forest of Arden as an advance model of the age of automation when all things are translatable into any thing else that is desired:

And this our life, exempt from public haunt,
Finds tongues in trees, books in the running brooks,
Sermons in stones, and good in every thing.
I would not change it.
AMIELS: Happy is your Grace,
That can translate the stubbornness of fortune
Into so quiet and so sweet a style.
(*As You Like It*, II, i. 15-21)

Shakespeare speaks of a world into which, by programming, as it were, one can play back the materials of the natural world in a variety of levels and intensities of style. We are close to doing just this on a massive scale at the present time electronically. Here is the image of the golden age as one of complete metamorphoses or translations of nature into human art, that stands ready of access to our electric age. The poet Stephane Mallarme thought "the world exists to end in a book." We are now in a position to go beyond that and to transfer the entire show to the memory of a computer. For man, as Julian Huxley observes, unlike merely biological creatures, possesses an apparatus of transmission and transformation based on his power to store experience. And his power to store, as in a language itself, is also a means of transformation of experience:

"Those pearls that were his eyes."

Our dilemma may become like that of the listener who phoned the radio station: "Are you the station that gives twice as much weather? Well, turn it off. I'm drowning."

Or we might return to the state of tribal man, for whom magic rituals are his means of "applied knowledge." Instead of translating nature into art, the native nonliterate attempts to invest nature with spiritual energy.

Perhaps there is a key to some of these problems in the Freudian idea that when we fail to translate some natural event or experience into conscious art we "repress" it. It is this mechanism that also serves to numb us in the presence of those extensions of ourselves that are the media studied in this book. For just as a metaphor transforms and transmits experience, so do the media. When we say, "I'll take a rain-check on that," we translate a social invitation into a sporting event, stepping up the conventional regret to an image of spontaneous disappointment: "Your invitation is not just one of those casual gestures that I must brush off. It makes me feel all the frustration of an interrupted ball game that I can't get with it." As in all metaphors, there are complex ratios among four parts: "Your invitation is to ordinary invitations as ball games are to conventional social life."

It is in this way that by seeing one set of relations through another set that we store and amplify experience in such forms as money. For money is also a metaphor. And all media as extensions of ourselves serve to provide new transforming vision and awareness. "It is an excellent invention," Bacon says, "that Pan or the world is said to make choice of Echo only (above all other speeches or voices) for his wife, for that alone is true philosophy which cloth faithfully render the very words of the world . . ."

Today Mark II stands by to render the masterpieces of literature from any language into any other language, giving as follows, the words of a Russian critic of Tolstoy about "War and World (peace . . . But nonetheless culture not stands) costs on place. Something translate. Something print." (Boorstin, 141)

Our very word "grasp" or "apprehension" points to the process of getting at one thing through another, of handling and sensing many facets at a time through more than one sense at a time. It begins to be evident that "touch" is not skin but the interplay of the

senses, and "keeping in touch" or "getting in touch" is a matter of a fruitful meeting of the senses, of sight translated into sound and sound into movement, and taste and smell. The "common sense" was for many centuries held to be the peculiar human power of translating one kind of experience of one sense into all the senses, and presenting the result continuously as a unified image to the mind. In fact, this image of a unified ratio among the senses was long held to be the mark of our rationality, and may in the computer age easily become so again. For it is now possible to program ratios among the senses that approach the condition of consciousness. Yet such a condition would necessarily be an extension of our own consciousness as much as wheel is an extension of feet in rotation. Having extended or translated our central nervous system into the electromagnetic technology, it is but a further stage to transfer our consciousness to the computer world as well. Then, at least, we shall be able to program consciousness in such wise that it cannot be numbed nor distracted by the Narcissus illusions of the entertainment world that beset mankind when he encounters himself extended in his own gimmickry.

Media as Translators /61

If the work of the city is the remaking or translating of man into a more suitable form than his nomadic ancestors achieved, then might not our current translation of our entire lives into the spiritual form of information seem to make of the entire globe, and of the human family, a single consciousness?

Challenge and Collapse /62

7. Challenge and Collapse: The Nemesis of Creativity

It was Bertrand Russell who declared that the great discovery of the twentieth century was the technique of the suspended judgment. A.N. Whitehead, on the other hand, explained how the great discovery of the nineteenth century was the discovery of the technique of discovery. Namely, the technique of starting with the thing to be discovered and working back, step by step, as on an assembly line, to the point at which it is necessary to start in order to reach the desired object. In the arts this meant starting with the effect and then inventing a poem, painting, or building that would have just that effect and no other.

But the "technique of the suspended judgment" goes further. It anticipates the effect of, say, an unhappy childhood on an adult, and offsets the effect before it happens. In psychiatry, it is the technique of total permissiveness extended as an anesthetic for the mind, while various adhesions and moral effects of false judgments are systematically eliminated.

Challenge and Collapse /63

This is a very different thing from the numbing or narcotic effect of new technology that lulls attention while the new form slams the gates of judgment and perception. For massive social surgery is needed to insert new technology into the group mind, and this is achieved by the built-in numbing apparatus discussed earlier. Now the "technique of the suspended judgment" presents the possibility of rejecting the narcotic and of

postponing indefinitely the operation of inserting the new technology in the social psyche. A new stasis is in prospect.

Werner Heisenberg, in *The Physicist's Conception of Nature*, is an example of the new quantum physicist whose over-all awareness of forms suggests to him that we would do well to stand aside from most of them. He points out that technical change alters not only habits of life, but patterns of thought and valuation, citing with approval the outlook of the Chinese sage:

As Tzu-Gung was traveling through the regions north of the river Han, he saw an old man working in his vegetable garden. He had dug an irrigation ditch. The man would descend into a well, fetch up a vessel of water in his arms and pour it out into the ditch. While his efforts were tremendous the results appeared to be very meager.

Tzu-Gung said, "There is a way whereby you can irrigate a hundred ditches in one day, and whereby you can do much with little effort. Would you not like to hear of it?"

Then the gardener stood up, looked at him and said, "And what would that be?"

Tzu-Gung replied, "You take a wooden lever, weighted at the back and light in front. In this way you can bring up water so quickly that it just gushes out. This is called a draw."

Then anger rose up in the old man's face, and he said, "I have heard my teacher say that whoever uses machines does all his work like a machine. He who does his work like a machine grows a heart like a machine, and he who carries the heart of a machine in his breast loses his simplicity. He who has lost his simplicity becomes unsure in the strivings of his soul. Uncertainty in the strivings of the soul is something which does not agree with honest sense. It is not that I do not know of such things; I am ashamed to use them."

Challenge and Collapse /64

Perhaps the most interesting point about this anecdote is that it appeals to a modern physicist. It would not have appealed to Newton or to Adam Smith, for they were great experts and advocates of the fragmentary and the specialist approaches. It is by means quite in accord with the outlook of the Chinese sage that Hans Selye works at his "stress" idea of illness. In the 1920s he had been baffled at why physicians always seemed to concentrate on the recognition of individual diseases and specific remedies for such isolated causes, while never paying any attention to the "syndrome of just being sick." Those who are concerned with the program "content" of media and not with the medium proper, appear to be in the position of physicians who ignore the "syndrome of just being sick." Hans Selye, in tackling a total, inclusive approach to the field of sickness, began what Adolphe Jonas has continued in *Irritation and Counter-Irritation*; namely, a quest for the response to injury as such, or to novel impact of any kind. Today we have anesthetics that enable us to perform the most frightful physical operations on one another.

The new media and technologies by which we amplify and extend ourselves constitute huge collective surgery carried out on the social body with complete disregard for

antiseptics. If the operations are needed, the inevitability of infecting the whole system during the operation has to be considered. For in operating on society with a new technology, it is not the incised area that is most affected. The area of impact and incision is numb. It is the entire system that is changed. The effect of radio is visual, the effect of the photo is auditory. Each new impact shifts the ratios among all the senses. What we seek today is either a means of controlling these shifts in the sense-ratios of the psychic and social outlook, or a means of avoiding them altogether. To have a disease without its symptoms is to be immune. No society has ever known enough about its actions to have developed immunity to its new extensions or technologies. Today we have begun to sense that art may be able to provide such immunity.

Challenge and Collapse /65

In the history of human culture there is no example of a conscious adjustment of the various factors of personal and social life to new extensions except in the puny and peripheral efforts of artists. The artist picks up the message of cultural and technological challenge decades before its transforming impact occurs. He, then, builds models or Noah's arks for facing the change that is at hand. "The war of 1870 need never have been fought had people read my *Sentimental Education*," said Gustave Flaubert. It is this aspect of new art that Kenneth Galbraith recommends to the careful study of businessmen who want to stay in business. For in the electric age there is no longer any sense in talking about the artist's being ahead of his time. Our technology is, also, ahead of its time, if we reckon by the ability to recognize it for what it is. To prevent undue wreckage in society, the artist tends now to move from the ivory tower to the control tower of society. Just as higher education is no longer a frill or luxury but a stark need of production and operational design in the electric age, so the artist is indispensable in the shaping and analysis and understanding of the life of forms, and structures created by electric technology.

The percussed victims of the new technology have invariably muttered clichés about the impracticality of artists and their fanciful preferences. But in the past century it has come to be generally acknowledged that, in the words of Wyndham Lewis, "The artist is always engaged in writing a detailed history of the future because he is the only person aware of the nature of the present." Knowledge of this simple fact is now needed for human survival. The ability of the artist to sidestep the bully blow of new technology of any age, and to parry such violence with full awareness, is age-old. Equally age-old is the inability of the percussed victims, who cannot sidestep the new violence, to recognize their need of the artist. To reward and to make celebrities of artists can, also, be a way of ignoring their prophetic work, and preventing its timely use for survival. The artist is the man in any field, scientific or humanistic, who grasps the implications of his actions and of new knowledge in his own time. He is the man of integral awareness.

Challenge and Collapse /66

The artist can correct the sense ratios before the blow of new technology has numbed conscious procedures. He can correct them before numbness and subliminal groping and reaction begin. If this is true, how is it possible to present the matter to those who are in a position to do something about it? If there were even a remote likelihood of this analysis being true, it would warrant a global armistice and period of stock-taking. If it

is true that the artist possesses the means of anticipating and avoiding the consequences of technological trauma, then what are we to think of the world and bureaucracy of "art appreciation"? Would it not seem suddenly to be a conspiracy to make the artist a frill, a fribble, or a Milltown? If men were able to be convinced that art is precise advance knowledge of how to cope with the psychic and social consequences of the next technology, would they all become artists? Or would they begin a careful translation of new art forms into social navigation charts? I am curious to know what would happen if art were suddenly seen for what it is, namely, exact information of how to rearrange one's psyche in order to anticipate the next blow from our own extended faculties. Would we, then, cease to look at works of art as an explorer might regard the gold and gems used as the ornaments of simple nonliterate?

At any rate, in experimental art, men are given the exact specifications of coming violence to their own psyches from their own counter-irritants or technology. For those parts of our selves that we thrust out in the form of new invention are attempts to counter or neutralize collective pressures and irritations. But the counter-irritant usually proves a greater plague than the initial irritant, like a drug habit. And it is here that the artist can show us how to "ride with the punch," instead of "taking it on the chin." It can only be repeated that human history is a record of "taking it on the chin."

Emile Durkheim long ago expressed the idea that the specialized task always escaped the action of the social conscience. In this regard, it would appear that the artist is the social conscience and is treated accordingly! "We have no art," say the Balinese; "we do everything as well as possible."

Challenge and Collapse /67

The modern metropolis is now sprawling helplessly after the impact of the motorcar. As a response to the challenge of railway speeds the suburb and the garden city arrived too late, or just in time to become a motorcar disaster. For an arrangement of functions adjusted to one set of intensities becomes unbearable at another intensity. And a technological extension of our bodies designed to alleviate physical stress can bring on psychic stress that may be much worse. Western specialist technology transferred to the Arab world in late Roman times released a furious discharge of tribal energy.

The somewhat devious means of diagnosis that have to be used to pin down the actual form and impact of a new medium are not unlike those indicated in detective fiction by Peter Cheyney. In *You Can't Keep the Change* (Collins, London, 1956) he wrote:

A case to Callaghan was merely a collection of people, some of whom all of whom were giving incorrect information, or telling lies, because circumstances either forced them or led them into the process.

But the fact that they had to tell lies; had to give false impressions, necessitated a reorientation of their own viewpoints and their own lives. Sooner or later they became exhausted or careless. Then, and not until then, was an investigator able to put his finger on the one fact that would lead him to a possible logical solution.

It is interesting to note that success in keeping up a respectable front of customary kind can only be done by a frantic scramble back of the facade. After the crime, after the

blow has fallen, the facade of custom can only be held up by swift rearrangement of the props. So it is in our social lives when a new technology strikes, or in our private life when some intense and, therefore, indigestible experience occurs, and the censor acts at once to numb us from the blow and to ready the faculties to assimilate the intruder. Peter Cheyney's observations of a mode of detective fiction is another instance of a popular form of entertainment functioning as mimic model of the real thing.

Challenge and Collapse /68

Perhaps the most obvious "closure" or psychic consequence of any new technology is just the demand for it. Nobody wants a motorcar till there are motorcars, and nobody is interested in TV until there are TV programs. This power of technology to create its own world of demand is not independent of technology being first an extension of our own bodies and senses. When we are deprived of our sense of sight, the other senses take up the role of sight in some degree. But the need to use the senses that are available is as insistent as breathing a fact that makes sense of the urge to keep radio and TV going more or less continuously. The urge to continuous use is quite independent of the "content" of public programs or of the private sense life, being testimony to the fact that technology is part of our bodies. Electric technology is directly related to our central nervous systems, so it is ridiculous to talk of "what the public wants" played over its own nerves. This question would be like asking people what sort of sights and sounds they would prefer around them in an urban metropolis! Once we have surrendered our senses and nervous systems to the private manipulation of those who would try to benefit from taking a lease on our eyes and ears and nerves, we don't really have any rights left. Leasing our eyes and ears and nerves to commercial interests is like handing over the common speech to a private corporation, or like giving the earth's atmosphere to a company as a monopoly. Something like this has already happened with outer space, for the same reasons that we have leased our central nervous systems to various corporations. As long as we adopt the Narcissus attitude of regarding the extensions of our own bodies as really out there and really independent of us, we will meet all technological challenges with the same sort of banana- skin pirouette and collapse.

Archimedes once said, "Give me a place to stand and I will move the world." Today he would have pointed to our electric media and said, "I will stand on your eyes, your ears, your nerves, and your brain, and the world will move in any tempo or pattern I choose." We have leased these "places to stand" to private corporations.

Challenge and Collapse /69

Arnold Toynbee has devoted much of his *A Study of History* to analyzing the kinds of challenge faced by a variety of cultures during many centuries. Highly relevant to Western man is Toynbee's explanation of how the lame and the crippled respond to their handicaps in a society of active warriors. They become specialists like Vulcan, the smith and armorer. And how do whole communities act when conquered and enslaved? The same strategy serves them as it does the lame individual in a society of warriors. They specialize and become indispensable to their masters. It is probably the long human history of enslavement, and the collapse into specialism as a counter-irritant, that have put the stigma of servitude and pusillanimity on the figure of the specialist, even in modern times. The capitulation of Western man to his technology, with its crescendo of specialized demands, has always appeared to many observers of our world

as a kind of enslavement. But the resulting fragmentation has been voluntary and enthusiastic, unlike the conscious strategy of specialism on the part of the captives of military conquest.

It is plain that fragmentation or specialism as a technique of achieving security under tyranny and oppression of any kind has an attendant danger. Perfect adaptation to any environment is achieved by a total channeling of energies and vital force that amounts to a kind of static terminus for a creature. Even slight changes in the environment of the very well adjusted find them without any resource to meet new challenge. Such is the plight of the representatives of "conventional wisdom" in any society. Their entire stake of security and status is in a single form of acquired knowledge, so that innovation is for them not novelty but annihilation.

A related form of challenge that has always faced cultures is the simple fact of a frontier or a wall, on the other side of which exists another kind of society. Mere existence side by side of any two forms of organization generates a great deal of tension. Such, indeed, has been the principle of symbolist artistic structures in the past century. Toynbee observes that the challenge of a civilization set side by side with a tribal society has over and over demonstrated that the simpler society finds its integral economy and institutions "disintegrated by a rain of psychic energy generated by the civilization" of the more complex culture. When two societies exist side by side; the psychic challenge of the more complex one acts as an explosive release of energy in the simpler one. For prolific evidence of this kind of problem it is not necessary to look beyond the life of the teenager lived daily in the midst of a complex urban center. As the barbarian was driven to furious restlessness by the civilized contact, collapsing into mass migration, so the teenager, compelled to share the life of a city that cannot accept him as an adult, collapses into "rebellion without a cause." Earlier the adolescent had been provided with a rain check. He was prepared to wait it out. But since TV, the drive to participation has ended adolescence, and every American home has its Berlin wall.

Challenge and Collapse /70

Toynbee is very generous in providing examples of widely varied challenge and collapse, and is especially apt in pointing to the frequent and futile resort to futurism and archaism as strategies of encountering radical change. But to point back to the day of the horse or to look forward to the coming of antigravitational vehicles is not an adequate response to the challenge of the motor car. Yet these two uniform ways of backward and forward looking are habitual ways of avoiding the discontinuities of present experience with their demand for sensitive inspection and appraisal. Only the dedicated artist seems to have the power for encountering the present actuality.

Toynbee urges again and again the cultural strategy of the imitation of the example of great men. This, of course, is to locate cultural safety in the power of the will, rather than in the power of adequate perception of situations. Anybody could quip that this is the British trust in character as opposed to intellect. In view of the endless power of men to hypnotize themselves into unawareness in the presence of challenge, it may be argued that will power is as useful as intelligence for survival. Today we need also the will to be exceedingly informed and aware.

Challenge and Collapse /71

Arnold Toynbee gives an example of Renaissance technology being effectively encountered and creatively controlled when he shows how the revival of the decentralized medieval parliament saved English society from the monopoly of centralism that seized the continent. Lewis Mumford in *The City in History* tells the strange tale of how the New England town was able to carry out the pattern of the medieval ideal city because it was able to dispense with walls and to mix town and country. When the technology of a time is powerfully thrusting in one direction, wisdom may well call for a countervailing thrust. The implosion of electric energy in our century cannot be met by explosion or expansion, but it can be met by decentralism and the flexibility of multiple small centers. For example, the rush of students into our universities is not explosion but implosion. And the needful strategy to encounter this force is not to enlarge the university, but to create numerous groups of autonomous colleges in place of our centralized university plant that grew up on the lines of European government and nineteenth-century industry.

In the same way the excessive tactile effects of the TV image cannot be met by mere program changes. Imaginative strategy based on adequate diagnosis would prescribe a corresponding depth or structural approach to the existing literary and visual world. If we persist in a conventional approach to these developments our traditional culture will be swept aside as scholasticism was in the sixteenth century. Had the Schoolmen with their complex oral culture understood the Gutenberg technology, they could have created a new synthesis of written and oral education instead of bowing out of the picture and allowing the merely visual page to take over the educational enterprise. The oral & schoolmen did not meet the new visual challenge of print, and the resulting expansion or explosion of Gutenberg technology was in many respects an impoverishment of the culture, as humanitarians like Mumford are now beginning to explain. Arnold Toynbee, in *A Study of History*, in considering "the nature of growths of civilizations," not only abandons the concept of enlargement as a criterion of real growth of society, but states: "More often geographical expansion is a concomitant of real decline and coincides with a 'time of troubles' or a universal state both of them stages of decline and disintegration."

Challenge and Collapse /72

Toynbee expounds the principle that times of trouble or rapid change produce militarism, and it is militarism that produces empire and expansion. The old Greek myth which taught that the alphabet produced militarism ("King Cadmus sowed the dragon's teeth, and they sprang up armed men") really goes much deeper than Toynbee's story. In fact, "militarism" is just vague description, not analysis of causality at all. Militarism is a kind of visual organization of social energies that is both specialist and explosive, so that it is merely repetitive to say, as Toynbee does, that it both creates large empires and causes social break down. But militarism is a form of industrialism or the concentration of large amounts of homogenized energies into a few kinds of production. The Roman soldier was a man with a spade. He was an expert workman and builder who processed and packaged the resources of many societies and sent them home. Before machinery, the only massive work forces available for processing material were soldiers or slaves. As the Greek myth of Cadmus points out, the phonetic alphabet was the greatest processor of men for homogenized military life that was known to antiquity. The age of Greek society that Herodotus acknowledges to have been "overwhelmed by more

troubles than in the twenty preceding generations" was the time that to our literary retrospect appears as one of the greatest of human centuries. It was Macaulay who remarked that it was not pleasant to live in times about which it was exciting to read. The succeeding age of Alexander saw Hellenism expand into Asia and prepare the course of the later Roman expansion. These, however, were the very centuries in which Greek civilization obviously fell apart.

Toynbee points to the strange falsification of history by archeology, insofar as the survival of many material objects of the past does not indicate the quality of ordinary life and experience at any particular time. Continuous technical improvement in the means of warfare occurs over the entire period of Hellenic and Roman decline. Toynbee checks out his hypothesis by testing it with the developments in Greek agriculture. When the enterprize of Solon weaned the Greeks from mixed farming to a program of specialized products for export, there were happy consequences and a glorious manifestation of energy in Greek life. When the next phase of the same specialist stress involved much reliance on slave labor, there was spectacular increase of production. But the armies of technologically specialized slaves working the land blighted the social existence of the independent yeomen and small farmers, and led to the strange world of the Roman towns and cities crowded with rootless parasites.

Challenge and Collapse /73

To a much greater degree than Roman slavery, the specialism of mechanized industry and market organization has faced Western man with the challenge of manufacture by mono-fracture, or the tackling of all things and operations one-bit-at-a-time. This is the challenge that has permeated all aspects of our lives and enabled us to expand so triumphantly in all directions and in all spheres.